

SEQUENCE LISTING

<110> NATIONAL INSTITUTE OF ADVANCED INDUSTRIAL SCIENCE AND
TECHNOLOGY
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<120> COMPOSITION AND METHOD FOR INCREASING EFFICIENCY OF INTRODUCTION OF TARGET
SUBSTANCE INTO CELL

<130> A1003PCT

<150> JP2003-057869

<151> 2003/03/04

<160> 18

<210> 1

<211> 1929

<212> DNA

<213> Homo sapiens

<220>

<221> CDS

<222> (1)..(1929)

<223> fibronectin 1

<400> 1

atg ctt agg ggt ccg ggg ccc ggg ctg ctg ctg ctg gcc gtc cag tgc 48

Met Leu Arg Gly Pro Gly Pro Gly Leu Leu Leu Leu Ala Val Gln Cys

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ctg ggg aca gcg gtg ccc tcc acg gga gcc tcg aag agc aag agg cag 96

Leu Gly Thr Ala Val Pro Ser Thr Gly Ala Ser Lys Ser Lys Arg Gln

20

25

30

gct cag caa atg gtt cag ccc cag tcc ccg gtg gct gtc agt caa agc

144

Ala Gln Gln Met Val Gln Pro Gln Ser Pro Val Ala Val Ser Gln Ser

35

40

45

aag ccc ggt tgt tat gac aat gga aaa cac tat cag ata aat caa cag

192

Lys Pro Gly Cys Tyr Asp Asn Gly Lys His Tyr Gln Ile Asn Gln Gln

50

55

60

tgg gag cgg acc tac cta ggc aat gcg ttg gtt tgt act tgt tat gga

240

Trp Glu Arg Thr Tyr Leu Gly Asn Ala Leu Val Cys Thr Cys Tyr Gly

65

70

75

80

gga agc cga ggt ttt aac tgc gag agt aaa cct gaa gct gaa gag act

288

Gly Ser Arg Gly Phe Asn Cys Glu Ser Lys Pro Glu Ala Glu Glu Thr

85

90

95

tgc ttt gac aag tac act ggg aac act tac cga gtg ggt gac act tat

336

Cys Phe Asp Lys Tyr Thr Gly Asn Thr Tyr Arg Val Gly Asp Thr Tyr

100

105

110

gag cgt cct aaa gac tcc atg atc tgg gac tgt acc tgc atc ggg gct

384

Glu Arg Pro Lys Asp Ser Met Ile Trp Asp Cys Thr Cys Ile Gly Ala

115

120

125

ggg cga ggg aga ata agc tgt acc atc gca aac cgc tgc cat gaa ggg 432

Gly Arg Gly Arg Ile Ser Cys Thr Ile Ala Asn Arg Cys His Glu Gly

130

135

140

ggg cag tcc tac aag att ggt gac acc tgg agg aga cca cat gag act 480

Gly Gln Ser Tyr Lys Ile Gly Asp Thr Trp Arg Arg Pro His Glu Thr

145

150

155

160

ggg ggt tac atg tta gag tgt gtg tgt ctt ggt aat gga aaa gga gaa 528

Gly Gly Tyr Met Leu Glu Cys Val Cys Leu Gly Asn Gly Lys Gly Glu

165

170

175

tgg acc tgc aag ccc ata gct gag aag tgt ttt gat cat gct gct ggg 576

Trp Thr Cys Lys Pro Ile Ala Glu Lys Cys Phe Asp His Ala Ala Gly

180

185

190

act tcc tat gtg gtc gga gaa acg tgg gag aag ccc tac caa ggc tgg 624

Thr Ser Tyr Val Val Gly Glu Thr Trp Glu Lys Pro Tyr Gln Gly Trp

195

200

205

atg atg gta gat tgt act tgc ctg gga gaa ggc agc gga cgc atc act 672

Met Met Val Asp Cys Thr Cys Leu Gly Glu Gly Ser Gly Arg Ile Thr

210

215

220

tgc act tct aga aat aga tgc aac gat cag gac aca agg aca tcc tat 720

4/179

ggc aac gga gtc agc tgc caa gag aca gct gta acc cag act tac ggt 1056

Gly Asn Gly Val Ser Cys Gln Glu Thr Ala Val Thr Gln Thr Tyr Gly

340

345

350

ggc aac tca aat gga gag cca tgt gtc tta cca ttc acc tac aat ggc 1104

Gly Asn Ser Asn Gly Glu Pro Cys Val Leu Pro Phe Thr Tyr Asn Gly

355

360

365

agg acg gac agc aca act tcg aat tat gag cag gac cag aaa tac tct 1152

Arg Thr Asp Ser Thr Thr Ser Asn Tyr Glu Gln Asp Gln Lys Tyr Ser

370

375

380

ttc tgc aca gac cac act gtt ttg gtt cag act cga gga gga aat tcc 1200

Phe Cys Thr Asp His Thr Val Leu Val Gln Thr Arg Gly Gly Asn Ser

385

390

395

400

aat ggt gcc ttg tgc cac ttc ccc ttc cta tac aac aac cac aat tac 1248

Asn Gly Ala Leu Cys His Phe Pro Phe Leu Tyr Asn Asn His Asn Tyr

405

410

415

act gat tgc act tct gag ggc aga aga gac aac atg aag tgg tgt ggg 1296

Thr Asp Cys Thr Ser Glu Gly Arg Arg Asp Asn Met Lys Trp Cys Gly

420

425

430

acc aca cag aac tat gat gcc gac cag aag ttt ggg ttc tgc ccc atg 1344

Thr Thr Gln Asn Tyr Asp Ala Asp Gln Lys Phe Gly Phe Cys Pro Met
 435 440 445
 gct gcc cac gag gaa atc tgc aca acc aat gaa ggg gtc atg tac cgc 1392
 Ala Ala His Glu Glu Ile Cys Thr Thr Asn Glu Gly Val Met Tyr Arg
 450 455 460
 att gga gat cag tgg gat aag cag cat gac atg ggt cac atg atg agg 1440
 Ile Gly Asp Gln Trp Asp Lys Gln His Asp Met Gly His Met Met Arg
 465 470 475 480
 tgc acg tgt gtt ggg aat ggt cgt ggg gaa tgg aca tgc att gcc tac 1488
 Cys Thr Cys Val Gly Asn Gly Arg Gly Glu Trp Thr Cys Ile Ala Tyr
 485 490 495
 tcg cag ctt cga gat cag tgc att gtt gat gac atc act tac aat gtg 1536
 Ser Gln Leu Arg Asp Gln Cys Ile Val Asp Asp Ile Thr Tyr Asn Val
 500 505 510
 aac gac aca ttc cac aag cgt cat gaa gag ggg cac atg ctg aac tgt 1584
 Asn Asp Thr Phe His Lys Arg His Glu Glu Gly His Met Leu Asn Cys
 515 520 525
 aca tgc ttc ggt cag ggt cgg ggc agg tgg aag tgt gat ccc gtc gac 1632
 Thr Cys Phe Gly Gln Gly Arg Gly Arg Trp Lys Cys Asp Pro Val Asp
 530 535 540

caa tgc cag gat tca gag act ggg acg ttt tat caa att gga gat tca	1680
Gln Cys Gln Asp Ser Glu Thr Gly Thr Phe Tyr Gln Ile Gly Asp Ser	
545 550 555 560	
tgg gag aag tat gtg cat ggt gtc aga tac cag tgc tac tgc tat ggc	1728
Trp Glu Lys Tyr Val His Gly Val Arg Tyr Gln Cys Tyr Cys Tyr Gly	
565 570 575	
cgt ggc att ggg gag tgg cat tgc caa cct tta cag acc tat cca agc	1776
Arg Gly Ile Gly Glu Trp His Cys Gln Pro Leu Gln Thr Tyr Pro Ser	
580 585 590	
tca agt ggt cct gtc gaa gta ttt atc act gag act ccg agt cag ccc	1824
Ser Ser Gly Pro Val Glu Val Phe Ile Thr Glu Thr Pro Ser Gln Pro	
595 600 605	
aac tcc cac ccc atc cag tgg aat gca cca cag cca tct cac att tcc	1872
Asn Ser His Pro Ile Gln Trp Asn Ala Pro Gln Pro Ser His Ile Ser	
610 615 620	
aag tac att ctc agg tgg aga cct gtg agt atc cca ccc aga aac ctt	1920
Lys Tyr Ile Leu Arg Trp Arg Pro Val Ser Ile Pro Pro Arg Asn Leu	
625 630 635 640	
gga tac tga	1929

Gly Tyr

<210> 2

<211> 642

<212> PRT

<213> Homo sapiens

<400> 2

Met Leu Arg Gly Pro Gly Pro Gly Leu Leu Leu Leu Ala Val Gln Cys

1 5 10 15

Leu Gly Thr Ala Val Pro Ser Thr Gly Ala Ser Lys Ser Lys Arg Gln

20 25 30

Ala Gln Gln Met Val Gln Pro Gln Ser Pro Val Ala Val Ser Gln Ser

35 40 45

Lys Pro Gly Cys Tyr Asp Asn Gly Lys His Tyr Gln Ile Asn Gln Gln

50 55 60

Trp Glu Arg Thr Tyr Leu Gly Asn Ala Leu Val Cys Thr Cys Tyr Gly

65 70 75 80

Gly Ser Arg Gly Phe Asn Cys Glu Ser Lys Pro Glu Ala Glu Glu Thr

85 90 95

Cys Phe Asp Lys Tyr Thr Gly Asn Thr Tyr Arg Val Gly Asp Thr Tyr

100 105 110

Glu Arg Pro Lys Asp Ser Met Ile Trp Asp Cys Thr Cys Ile Gly Ala

115 120 125

Gly Arg Gly Arg Ile Ser Cys Thr Ile Ala Asn Arg Cys His Glu Gly

130 135 140

Gly Gln Ser Tyr Lys Ile Gly Asp Thr Trp Arg Arg Pro His Glu Thr

145 150 155 160

Gly Gly Tyr Met Leu Glu Cys Val Cys Leu Gly Asn Gly Lys Gly Glu

165

170

175

Trp Thr Cys Lys Pro Ile Ala Glu Lys Cys Phe Asp His Ala Ala Gly

180

185

190

Thr Ser Tyr Val Val Gly Glu Thr Trp Glu Lys Pro Tyr Gln Gly Trp

195

200

205

Met Met Val Asp Cys Thr Cys Leu Gly Glu Gly Ser Gly Arg Ile Thr

210

215

220

Cys Thr Ser Arg Asn Arg Cys Asn Asp Gln Asp Thr Arg Thr Ser Tyr

225

230

235

240

Arg Ile Gly Asp Thr Trp Ser Lys Lys Asp Asn Arg Gly Asn Leu Leu

245

250

255

Gln Cys Ile Cys Thr Gly Asn Gly Arg Gly Glu Trp Lys Cys Glu Arg

260

265

270

His Thr Ser Val Gln Thr Thr Ser Ser Gly Ser Gly Pro Phe Thr Asp

275

280

285

Val Arg Ala Ala Val Tyr Gln Pro Gln Pro His Pro Gln Pro Pro Pro

290

295

300

Tyr Gly His Cys Val Thr Asp Ser Gly Val Val Tyr Ser Val Gly Met

305

310

315

320

Gln Trp Leu Lys Thr Gln Gly Asn Lys Gln Met Leu Cys Thr Cys Leu

325

330

335

Gly Asn Gly Val Ser Cys Gln Glu Thr Ala Val Thr Gln Thr Tyr Gly

340

345

350

Gly Asn Ser Asn Gly Glu Pro Cys Val Leu Pro Phe Thr Tyr Asn Gly

355

360

365

Arg Thr Asp Ser Thr Thr Ser Asn Tyr Glu Gln Asp Gln Lys Tyr Ser

370

375

380

Phe Cys Thr Asp His Thr Val Leu Val Gln Thr Arg Gly Gly Asn Ser

385

390

395

400

Asn Gly Ala Leu Cys His Phe Pro Phe Leu Tyr Asn Asn His Asn Tyr

405

410

415

Thr Asp Cys Thr Ser Glu Gly Arg Arg Asp Asn Met Lys Trp Cys Gly

420

425

430

Thr Thr Gln Asn Tyr Asp Ala Asp Gln Lys Phe Gly Phe Cys Pro Met

435

440

445

Ala Ala His Glu Glu Ile Cys Thr Thr Asn Glu Gly Val Met Tyr Arg

450

455

460

Ile Gly Asp Gln Trp Asp Lys Gln His Asp Met Gly His Met Met Arg

465

470

475

480

Cys Thr Cys Val Gly Asn Gly Arg Gly Glu Trp Thr Cys Ile Ala Tyr

485

490

495

Ser Gln Leu Arg Asp Gln Cys Ile Val Asp Asp Ile Thr Tyr Asn Val

500

505

510

Asn Asp Thr Phe His Lys Arg His Glu Glu Gly His Met Leu Asn Cys

515

520

525

Thr Cys Phe Gly Gln Gly Arg Gly Arg Trp Lys Cys Asp Pro Val Asp

530

535

540

Gln Cys Gln Asp Ser Glu Thr Gly Thr Phe Tyr Gln Ile Gly Asp Ser

545

550

555

560

Trp Glu Lys Tyr Val His Gly Val Arg Tyr Gln Cys Tyr Cys Tyr Gly

565

570

575

Arg Gly Ile Gly Glu Trp His Cys Gln Pro Leu Gln Thr Tyr Pro Ser

580

585

590

Ser Ser Gly Pro Val Glu Val Phe Ile Thr Glu Thr Pro Ser Gln Pro

595

600

605

Asn Ser His Pro Ile Gln Trp Asn Ala Pro Gln Pro Ser His Ile Ser

610

615

620

Lys Tyr Ile Leu Arg Trp Arg Pro Val Ser Ile Pro Pro Arg Asn Leu

625

630

635

640

Gly Tyr

<210> 3

<211> 1437

<212> DNA

<213> Mus musculus

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<222> (1)..(1437)

<223> vitronectin

<400> 3

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Met Ala Pro Leu Arg Pro Phe Phe Ile Leu Ala Leu Val Ala Trp Val

1 5 10 15

tct ctg gct gac caa gag tca tgc aag ggc cgc tgc act cag ggt ttc 96

Ser Leu Ala Asp Gln Glu Ser Cys Lys Gly Arg Cys Thr Gln Gly Phe

20 25 30

atg gcc agc aag aag tgt cag tgt gac gag ctt tgc act tac tat cag 144

Met Ala Ser Lys Lys Cys Gln Cys Asp Glu Leu Cys Thr Tyr Tyr Gln

35 40 45

agc tgc tgt gcc gac tac atg gag cag tgc aag ccc caa gta acg cgg 192

Ser Cys Cys Ala Asp Tyr Met Glu Gln Cys Lys Pro Gln Val Thr Arg

50 55 60

ggg gac gtg ttc act atg cca gag gat gat tat tgg agc tat gac tac 240

Gly Asp Val Phe Thr Met Pro Glu Asp Asp Tyr Trp Ser Tyr Asp Tyr

65 70 75 80

gtg gag gag ccc aag aac aat acc aac acc ggt gtg caa ccc gag aac	288
Val Glu Glu Pro Lys Asn Asn Thr Asn Thr Gly Val Gln Pro Glu Asn	
85 90 95	
acc tct cca ccc ggt gac cta aat cct cgg acg gac ggc act cta aag	336
Thr Ser Pro Pro Gly Asp Leu Asn Pro Arg Thr Asp Gly Thr Leu Lys	
100 105 110	
ccg aca gcc ttc cta gat cct gag gaa cag cca agc acc cca gcg cct	384
Pro Thr Ala Phe Leu Asp Pro Glu Glu Gln Pro Ser Thr Pro Ala Pro	
115 120 125	
aaa gtg gag caa cag gag gag atc cta agg ccc gac acc act gat caa	432
Lys Val Glu Gln Gln Glu Glu Ile Leu Arg Pro Asp Thr Thr Asp Gln	
130 135 140	
ggg acc cct gag ttt cca gag gaa gaa ctg tgc agt gga aag ccc ttt	480
Gly Thr Pro Glu Phe Pro Glu Glu Glu Leu Cys Ser Gly Lys Pro Phe	
145 150 155 160	
gac gcc ttc acg gat ctc aag aat ggg tcc ctc ttt gcc ttc cga ggg	528
Asp Ala Phe Thr Asp Leu Lys Asn Gly Ser Leu Phe Ala Phe Arg Gly	
165 170 175	
cag tac cgc tgt gag cta gat gag acg gca gtg agg cct ggg tac ccc	576
Gln Tyr Arg Cys Glu Leu Asp Glu Thr Ala Val Arg Pro Gly Tyr Pro	

180	185	190	
aaa ctt atc caa gat gtc tgg ggc att gag ggc ccc atc gat gct gcc			624
Lys Leu Ile Gln Asp Val Trp Gly Ile Glu Gly Pro Ile Asp Ala Ala			
195	200	205	
ttc act cgc atc aac tgt cag ggg aag acc tac ttg ttc aag ggt agt			672
Phe Thr Arg Ile Asn Cys Gln Gly Lys Thr Tyr Leu Phe Lys Gly Ser			
210	215	220	
cag tac tgg cgc ttt gag gat ggg gtc ctg gac cct ggt tat ccc cga			720
Gln Tyr Trp Arg Phe Glu Asp Gly Val Leu Asp Pro Gly Tyr Pro Arg			
225	230	235	240
aac atc tcc gaa ggc ttc agt ggc ata cca gac aat gtt gat gca gcg			768
Asn Ile Ser Glu Gly Phe Ser Gly Ile Pro Asp Asn Val Asp Ala Ala			
245	250	255	
ttc gcc ctt cct gcc cac cgt tac agt ggc cgg gaa agg gtc tac ttc			816
Phe Ala Leu Pro Ala His Arg Tyr Ser Gly Arg Glu Arg Val Tyr Phe			
260	265	270	
ttc aag ggg aag cag tac tgg gag cac gaa ttt cag cag caa ccc agc			864
Phe Lys Gly Lys Gln Tyr Trp Glu His Glu Phe Gln Gln Gln Pro Ser			
275	280	285	

cag gag gag tgc gaa ggc agc tct ctg tca gcc gtg ttt gag cac ttt	912
Gln Glu Glu Cys Glu Gly Ser Ser Leu Ser Ala Val Phe Glu His Phe	
290 295 300	
gcc ttg ctt cag cgg gac agc tgg gag aac att ttc gaa ctc ctc ttc	960
Ala Leu Leu Gln Arg Asp Ser Trp Glu Asn Ile Phe Glu Leu Leu Phe	
305 310 315 320	
tgg ggc aga tcc tct gat gga gcc aga gaa ccc caa ttc atc agc cgg	1008
Trp Gly Arg Ser Ser Asp Gly Ala Arg Glu Pro Gln Phe Ile Ser Arg	
325 330 335	
aac tgg cat ggt gtg cca ggg aaa gtg gac gct gct atg gcc ggc cgc	1056
Asn Trp His Gly Val Pro Gly Lys Val Asp Ala Ala Met Ala Gly Arg	
340 345 350	
atc tac gtc act ggc tcc tta tcc cac tct gcc caa gcc aaa aaa cag	1104
Ile Tyr Val Thr Gly Ser Leu Ser His Ser Ala Gln Ala Lys Lys Gln	
355 360 365	
ccg tct aag cgt aga agc cga aag cgc tat cgt tca cgc cga ggc cgt	1152
Pro Ser Lys Arg Arg Ser Arg Lys Arg Tyr Arg Ser Arg Arg Gly Arg	
370 375 380	
ggc cac aga cgc agc cag agc tcg aac tcc cgt cgt tca tca cgt tca	1200
Gly His Arg Arg Ser Gln Ser Ser Asn Ser Arg Arg Ser Ser Arg Ser	

385 390 395 400

atc tgg ttc tct ttg ttc tcc agc gag gag agt ggg cta gga acc tac 1248

Ile Trp Phe Ser Leu Phe Ser Ser Glu Glu Ser Gly Leu Gly Thr Tyr

 405 410 415

aac aac tat gat tat gat atg gac tgg ctt gta cct gcc acc tgc gag 1296

Asn Asn Tyr Asp Tyr Asp Met Asp Trp Leu Val Pro Ala Thr Cys Glu

 420 425 430

ccc att cag agc gtc tat ttc ttc tct gga gac aaa tac tac cga gtc 1344

Pro Ile Gln Ser Val Tyr Phe Phe Ser Gly Asp Lys Tyr Tyr Arg Val

 435 440 445

aac ctt aga acc cgg cga gtg gac tct gtg aat cct ccc tac cca cgc 1392

Asn Leu Arg Thr Arg Arg Val Asp Ser Val Asn Pro Pro Tyr Pro Arg

 450 455 460

tcc att gct cag tat tgg ctg ggc tgc ccg acc tct gag aag tag 1437

Ser Ile Ala Gln Tyr Trp Leu Gly Cys Pro Thr Ser Glu Lys

465 470 475

<210> 4

<211> 478

<212> PRT

<213> Mus musculus

<400> 4

Met Ala Pro Leu Arg Pro Phe Phe Ile Leu Ala Leu Val Ala Trp Val

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Ser Leu Ala Asp Gln Glu Ser Cys Lys Gly Arg Cys Thr Gln Gly Phe

20 25 30

Met Ala Ser Lys Lys Cys Gln Cys Asp Glu Leu Cys Thr Tyr Tyr Gln

35 40 45

Ser Cys Cys Ala Asp Tyr Met Glu Gln Cys Lys Pro Gln Val Thr Arg

50 55 60

Gly Asp Val Phe Thr Met Pro Glu Asp Asp Tyr Trp Ser Tyr Asp Tyr

65 70 75 80

Val Glu Glu Pro Lys Asn Asn Thr Asn Thr Gly Val Gln Pro Glu Asn

85

90

95

Thr Ser Pro Pro Gly Asp Leu Asn Pro Arg Thr Asp Gly Thr Leu Lys

100

105

110

Pro Thr Ala Phe Leu Asp Pro Glu Glu Gln Pro Ser Thr Pro Ala Pro

115

120

125

Lys Val Glu Gln Gln Glu Glu Ile Leu Arg Pro Asp Thr Thr Asp Gln

130

135

140

Gly Thr Pro Glu Phe Pro Glu Glu Glu Leu Cys Ser Gly Lys Pro Phe

145

150

155

160

Asp Ala Phe Thr Asp Leu Lys Asn Gly Ser Leu Phe Ala Phe Arg Gly

165

170

175

Gln Tyr Arg Cys Glu Leu Asp Glu Thr Ala Val Arg Pro Gly Tyr Pro

180

185

190

Lys Leu Ile Gln Asp Val Trp Gly Ile Glu Gly Pro Ile Asp Ala Ala

195

200

205

Phe Thr Arg Ile Asn Cys Gln Gly Lys Thr Tyr Leu Phe Lys Gly Ser

210

215

220

Gln Tyr Trp Arg Phe Glu Asp Gly Val Leu Asp Pro Gly Tyr Pro Arg

225

230

235

240

Asn Ile Ser Glu Gly Phe Ser Gly Ile Pro Asp Asn Val Asp Ala Ala

245

250

255

Phe Ala Leu Pro Ala His Arg Tyr Ser Gly Arg Glu Arg Val Tyr Phe

260

265

270

Phe Lys Gly Lys Gln Tyr Trp Glu His Glu Phe Gln Gln Gln Pro Ser

275

280

285

Gln Glu Glu Cys Glu Gly Ser Ser Leu Ser Ala Val Phe Glu His Phe

290 295 300

Ala Leu Leu Gln Arg Asp Ser Trp Glu Asn Ile Phe Glu Leu Leu Phe

305 310 315 320

Trp Gly Arg Ser Ser Asp Gly Ala Arg Glu Pro Gln Phe Ile Ser Arg

325 330 335

Asn Trp His Gly Val Pro Gly Lys Val Asp Ala Ala Met Ala Gly Arg

340 345 350

Ile Tyr Val Thr Gly Ser Leu Ser His Ser Ala Gln Ala Lys Lys Gln

355 360 365

Pro Ser Lys Arg Arg Ser Arg Lys Arg Tyr Arg Ser Arg Arg Gly Arg

370 375 380

Gly His Arg Arg Ser Gln Ser Ser Asn Ser Arg Arg Ser Ser Arg Ser

385 390 395 400

Ile Trp Phe Ser Leu Phe Ser Ser Glu Glu Ser Gly Leu Gly Thr Tyr

405

410

415

Asn Asn Tyr Asp Tyr Asp Met Asp Trp Leu Val Pro Ala Thr Cys Glu

420

425

430

Pro Ile Gln Ser Val Tyr Phe Phe Ser Gly Asp Lys Tyr Tyr Arg Val

435

440

445

Asn Leu Arg Thr Arg Arg Val Asp Ser Val Asn Pro Pro Tyr Pro Arg

450

455

460

Ser Ile Ala Gln Tyr Trp Leu Gly Cys Pro Thr Ser Glu Lys

465

470

475

<210> 5

<211> 9511

<212> DNA

<213> Mus musculus

<220>

<221> CDS

<222> (121).. (9372)

<223> laminin-2 alpha chain

<400> 5

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gcggccaccg cogggatcct cttgctcctg ctottgggga cgctcgaagg ctcccagact 120

cag cgg cga cag tcc caa gcg cat caa cag aga ggt tta ttt cct gct 168

Gln Arg Arg Gln Ser Gln Ala His Gln Gln Arg Gly Leu Phe Pro Ala

1 5 10 15

gtc ctg aat ctt gct tog aat gca ctc atc aca acc aat gct aca tgt 216

Val Leu Asn Leu Ala Ser Asn Ala Leu Ile Thr Thr Asn Ala Thr Cys

20 25 30

ggg gaa aaa gga ccc gag atg tac tgc aag ttg gtg gaa cat gtc ccc 264

Gly Glu Lys Gly Pro Glu Met Tyr Cys Lys Leu Val Glu His Val Pro

35 40 45

ggg cag cct gtg agg aac cct cag tgc oga atc tgc aat cag aac agc 312

Gly Gln Pro Val Arg Asn Pro Gln Cys Arg Ile Cys Asn Gln Asn Ser

50	55	60	
agc aat cca tac cag agg cac ccg att acg aat gct att gat ggc aag			360
Ser Asn Pro Tyr Gln Arg His Pro Ile Thr Asn Ala Ile Asp Gly Lys			
65	70	75	80
aac aca tgg tgg cag agt ccc agt atc aag aat gga gtg gaa tac cat			408
Asn Thr Trp Trp Gln Ser Pro Ser Ile Lys Asn Gly Val Glu Tyr His			
	85	90	95
tat gtg aca att act ctg gat tta cag cag gtg ttc cag att gcc tac			456
Tyr Val Thr Ile Thr Leu Asp Leu Gln Gln Val Phe Gln Ile Ala Tyr			
100	105	110	
gta att gtg aag gca gcc aat tcc cct cgg cct gga aac tgg att ttg			504
Val Ile Val Lys Ala Ala Asn Ser Pro Arg Pro Gly Asn Trp Ile Leu			
115	120	125	
gaa cgt tcc ctg gat gac gtg gag tac aaa ccc tgg cag tat cat gcg			552
Glu Arg Ser Leu Asp Asp Val Glu Tyr Lys Pro Trp Gln Tyr His Ala			
130	135	140	
gtg aca gac acg gag tgc ctg acc ctc tac aat atc tat ccc cgc act			600
Val Thr Asp Thr Glu Cys Leu Thr Leu Tyr Asn Ile Tyr Pro Arg Thr			
145	150	155	160

gga cca cca tcc tac gcc aaa gat gat gag gtc atc tgc act tca ttt 648

Gly Pro Pro Ser Tyr Ala Lys Asp Asp Glu Val Ile Cys Thr Ser Phe

165

170

175

tat tcg aag atc cac cct tta gaa aat gga gag att cac att tct ttg 696

Tyr Ser Lys Ile His Pro Leu Glu Asn Gly Glu Ile His Ile Ser Leu

180

185

190

atc aat ggg aga cca agt gct gat gac ccc tcc cct gaa ctc ctg gaa 744

Ile Asn Gly Arg Pro Ser Ala Asp Asp Pro Ser Pro Glu Leu Leu Glu

195

200

205

ttc acc tct gct cgc tac att cgc ctg aga ttt cag agg atc cgc acc 792

Phe Thr Ser Ala Arg Tyr Ile Arg Leu Arg Phe Gln Arg Ile Arg Thr

210

215

220

ttg aat gca gac ttg atg atg ttt gct cac aaa gac ccc aga gaa atc 840

Leu Asn Ala Asp Leu Met Met Phe Ala His Lys Asp Pro Arg Glu Ile

225

230

235

240

gat ccc att gtc aca cga aga tat tac tat tct gtc aag gat att tca 888

Asp Pro Ile Val Thr Arg Arg Tyr Tyr Tyr Ser Val Lys Asp Ile Ser

245

250

255

gtt ggc ggg atg tgc atc tgt tat ggt cat gcc cgg gct tgt cca ctt 936

Val Gly Gly Met Cys Ile Cys Tyr Gly His Ala Arg Ala Cys Pro Leu

260	265	270	
gac cct gca aca aat aaa tca cgc tgt gag tgt gaa cat aac acc tgt			984
Asp Pro Ala Thr Asn Lys Ser Arg Cys Glu Cys Glu His Asn Thr Cys			
275	280	285	
ggg gaa agc tgt gac agg tgc tgt cca gga ttc cat cag aag cct tgg			1032
Gly Glu Ser Cys Asp Arg Cys Cys Pro Gly Phe His Gln Lys Pro Trp			
290	295	300	
aga gct gga acc ttc ctc acc aag tct gag tgt gaa gca tgc aat tgt			1080
Arg Ala Gly Thr Phe Leu Thr Lys Ser Glu Cys Glu Ala Cys Asn Cys			
305	310	315	320
cac gga aaa gct gag gaa tgc tat tat gat gaa act gtt gct agc aga			1128
His Gly Lys Ala Glu Glu Cys Tyr Tyr Asp Glu Thr Val Ala Ser Arg			
325	330	335	
aat cta agt tta aat ata cat ggg aag tac atc gga ggg ggt gtg tgc			1176
Asn Leu Ser Leu Asn Ile His Gly Lys Tyr Ile Gly Gly Gly Val Cys			
340	345	350	
atc aac tgc aca cat aac acg gct ggg ata aat tgt gag aca tgt gtt			1224
Ile Asn Cys Thr His Asn Thr Ala Gly Ile Asn Cys Glu Thr Cys Val			
355	360	365	

gat gga ttc ttc aga ccc aaa ggg gtg tca cca aat tat cca aga cca 1272

Asp Gly Phe Phe Arg Pro Lys Gly Val Ser Pro Asn Tyr Pro Arg Pro

370

375

380

tgc cag cca tgt cac tgt gat cca act ggc tcc ctt agt gaa gtc tgt 1320

Cys Gln Pro Cys His Cys Asp Pro Thr Gly Ser Leu Ser Glu Val Cys

385

390

395

400

gtc aaa gat gag aaa tac gcc cag cga ggg ttg aaa cct gga tcc tgt 1368

Val Lys Asp Glu Lys Tyr Ala Gln Arg Gly Leu Lys Pro Gly Ser Cys

405

410

415

cac tgc aaa act ggc ttt gga ggc gtg aac tgt gat cgc tgt gtc agg 1416

His Cys Lys Thr Gly Phe Gly Gly Val Asn Cys Asp Arg Cys Val Arg

420

425

430

ggg tac cat ggt tac cca gac tgc caa ccc tgt aac tgt agt ggc ttg 1464

Gly Tyr His Gly Tyr Pro Asp Cys Gln Pro Cys Asn Cys Ser Gly Leu

435

440

445

ggg agc aca aat gag gac cct tgc gtt ggg ccc tgt agc tgt aag gag 1512

Gly Ser Thr Asn Glu Asp Pro Cys Val Gly Pro Cys Ser Cys Lys Glu

450

455

460

aat gtt gaa ggt gaa gac tgt agt cgt tgc aaa tct ggt ttc ttc aac 1560

Asn Val Glu Gly Glu Asp Cys Ser Arg Cys Lys Ser Gly Phe Phe Asn

465	470	475	480	
ttg caa gaa gat aat cag aaa ggc tgt gag gag tgt ttc tgt tca gga				1608
Leu Gln Glu Asp Asn Gln Lys Gly Cys Glu Glu Cys Phe Cys Ser Gly				
	485	490	495	
gta tca aac aga tgt cag agt tcc tac tgg acc tat ggg aat att caa				1656
Val Ser Asn Arg Cys Gln Ser Ser Tyr Trp Thr Tyr Gly Asn Ile Gln				
	500	505	510	
gac atg cgt ggt tgg tat ctc aca gac ctc tct ggc cgc att cgg atg				1704
Asp Met Arg Gly Trp Tyr Leu Thr Asp Leu Ser Gly Arg Ile Arg Met				
	515	520	525	
gct ccc cag ctt gat aac cct gac tca cct cag cag atc agc atc agt				1752
Ala Pro Gln Leu Asp Asn Pro Asp Ser Pro Gln Gln Ile Ser Ile Ser				
	530	535	540	
aac tct gag gcc cgg aaa tcc ctg ctt gat ggt tac tac tgg agt gca				1800
Asn Ser Glu Ala Arg Lys Ser Leu Leu Asp Gly Tyr Tyr Trp Ser Ala				
545	550	555	560	
ccg cct cca tat ctg gga aac aga ctt cca gct gtt ggg gga cag ttg				1848
Pro Pro Pro Tyr Leu Gly Asn Arg Leu Pro Ala Val Gly Gly Gln Leu				
	565	570	575	

tca ttt acc atc tca tat gac ctc gaa gaa gag gaa gac gat aca gaa 1896

Ser Phe Thr Ile Ser Tyr Asp Leu Glu Glu Glu Glu Asp Asp Thr Glu

580

585

590

aaa ctc ctt cag ctg atg att atc ttt gag gga aat gac tta aga atc 1944

Lys Leu Leu Gln Leu Met Ile Ile Phe Glu Gly Asn Asp Leu Arg Ile

595

600

605

agc aca gcg tat aag gag gtg tac tta gag cca tct gaa gaa cac gtt 1992

Ser Thr Ala Tyr Lys Glu Val Tyr Leu Glu Pro Ser Glu Glu His Val

610

615

620

gag gag gtg tca ctc aaa gaa gag gcc ttt act ata cat gga aca aat 2040

Glu Glu Val Ser Leu Lys Glu Glu Ala Phe Thr Ile His Gly Thr Asn

625

630

635

640

ttg cca gtc act aga aaa gat ttc atg att gtt ctc aca aat ttg gga 2088

Leu Pro Val Thr Arg Lys Asp Phe Met Ile Val Leu Thr Asn Leu Gly

645

650

655

gag atc ctt atc caa atc aca tac aac tta ggg atg gac gcc atc ttc 2136

Glu Ile Leu Ile Gln Ile Thr Tyr Asn Leu Gly Met Asp Ala Ile Phe

660

665

670

agg ctg agt tct gtc aat ctt gaa tct cct gtc cct tat cct act gat 2184

Arg Leu Ser Ser Val Asn Leu Glu Ser Pro Val Pro Tyr Pro Thr Asp

675	680	685	
aga cgt att gca act gat gtg gaa gtt tgc cag tgt cca cct ggg tac			2232
Arg Arg Ile Ala Thr Asp Val Glu Val Cys Gln Cys Pro Pro Gly Tyr			
690	695	700	
agt ggc agc tct tgt gaa aca tgt tgg cct agg cac cga aga gtt aac			2280
Ser Gly Ser Ser Cys Glu Thr Cys Trp Pro Arg His Arg Arg Val Asn			
705	710	715	720
ggc acc att ttt ggt ggc att tgt gaa cca tgt cag tgc ttt gct cat			2328
Gly Thr Ile Phe Gly Gly Ile Cys Glu Pro Cys Gln Cys Phe Ala His			
725	730	735	
gca gaa gcc tgt gat gac atc aca gga gaa tgt ctg aac tgt aag gat			2376
Ala Glu Ala Cys Asp Asp Ile Thr Gly Glu Cys Leu Asn Cys Lys Asp			
740	745	750	
cac aca ggt ggg ccg tac tgc aat gaa tgt ctc cct gga ttc tat ggt			2424
His Thr Gly Gly Pro Tyr Cys Asn Glu Cys Leu Pro Gly Phe Tyr Gly			
755	760	765	
gat cct act cga gga agc cct gaa gac tgt cag ccc tgt gcc tgt cca			2472
Asp Pro Thr Arg Gly Ser Pro Glu Asp Cys Gln Pro Cys Ala Cys Pro			
770	775	780	

ctc aat atc cca tca aat aac ttt agt cca aca tgc cat tta gac cgg 2520

Leu Asn Ile Pro Ser Asn Asn Phe Ser Pro Thr Cys His Leu Asp Arg

785 790 795 800

agt ctg gga ttg atc tgt gac gag tgt cct att ggg tac aca gga ccg 2568

Ser Leu Gly Leu Ile Cys Asp Glu Cys Pro Ile Gly Tyr Thr Gly Pro

805 810 815

cgc tgt gag agg tgt gca gaa ggc tat ttt gga caa cct tcc gta cct 2616

Arg Cys Glu Arg Cys Ala Glu Gly Tyr Phe Gly Gln Pro Ser Val Pro

820 825 830

gga gga tca tgt cag cca tgc caa tgc aat gac aac ctt gac tac tcc 2664

Gly Gly Ser Cys Gln Pro Cys Gln Cys Asn Asp Asn Leu Asp Tyr Ser

835 840 845

atc cct ggc agc tgt gac agc ctg tct ggc tcc tgt ctg att tgt aag 2712

Ile Pro Gly Ser Cys Asp Ser Leu Ser Gly Ser Cys Leu Ile Cys Lys

850 855 860

cca ggt aca aca ggc cgg tac tgt gag ctc tgt gct gat ggg tat ttt 2760

Pro Gly Thr Thr Gly Arg Tyr Cys Glu Leu Cys Ala Asp Gly Tyr Phe

865 870 875 880

gga gac gcg gtt aat aca aag aac tgt caa cca tgc cgt tgt gat atc 2808

Gly Asp Ala Val Asn Thr Lys Asn Cys Gln Pro Cys Arg Cys Asp Ile

885	890	895	
aat ggc tcc ttc tca gag gat tgt cac aca aga act ggg caa tgt gag			2856
Asn Gly Ser Phe Ser Glu Asp Cys His Thr Arg Thr Gly Gln Cys Glu			
900	905	910	
tgc aga ccc aat gtt cag ggg cgg cac tgt gac gag tgt aag cct gaa			2904
Cys Arg Pro Asn Val Gln Gly Arg His Cys Asp Glu Cys Lys Pro Glu			
915	920	925	
acc ttt ggc ctg caa ctg gga agg ggt tgt ctg ccc tgc aac tgc aat			2952
Thr Phe Gly Leu Gln Leu Gly Arg Gly Cys Leu Pro Cys Asn Cys Asn			
930	935	940	
tct ttt ggg tct aag tcc ttt gac tgt gaa gca agt ggg cag tgc tgg			3000
Ser Phe Gly Ser Lys Ser Phe Asp Cys Glu Ala Ser Gly Gln Cys Trp			
945	950	955	960
tgc cag cct gga gta gca ggg aag aaa tgt gac cgt tgt gcc cat ggc			3048
Cys Gln Pro Gly Val Ala Gly Lys Lys Cys Asp Arg Cys Ala His Gly			
965	970	975	
tac ttc aac ttc caa gaa gga ggc tgc ata gct tgt gac tgt tot cat			3096
Tyr Phe Asn Phe Gln Glu Gly Gly Cys Ile Ala Cys Asp Cys Ser His			
980	985	990	

ctg ggc aac aac tgt gac cca aaa act ggc caa tgc att tgc cca ccc 3144

Leu Gly Asn Asn Cys Asp Pro Lys Thr Gly Gln Cys Ile Cys Pro Pro

995

1000

1005

aat acc act gga gaa aag tgt tct gag tgt ctt ccc aac acc tgg 3189

Asn Thr Thr Gly Glu Lys Cys Ser Glu Cys Leu Pro Asn Thr Trp

1010

1015

1020

ggt cac agc att gtc acc ggc tgt aag gtt tgt aac tgc agc act 3234

Gly His Ser Ile Val Thr Gly Cys Lys Val Cys Asn Cys Ser Thr

1025

1030

1035

gtg ggg tcc ttg gct tct cag tgc aat gta aac acg ggc cag tgc 3279

Val Gly Ser Leu Ala Ser Gln Cys Asn Val Asn Thr Gly Gln Cys

1040

1045

1050

agc tgt cat cca aaa ttc tct ggt atg aaa tgc tca gag tgc agc 3324

Ser Cys His Pro Lys Phe Ser Gly Met Lys Cys Ser Glu Cys Ser

1055

1060

1065

cga ggt cac tgg aac tat cct ctc tgc act cta tgt gac tgc ttc 3369

Arg Gly His Trp Asn Tyr Pro Leu Cys Thr Leu Cys Asp Cys Phe

1070

1075

1080

ctt cca ggc aca gat gcc acg act tgt gat ctg gag act agg aaa 3414

Leu Pro Gly Thr Asp Ala Thr Thr Cys Asp Leu Glu Thr Arg Lys

1085	1090	1095	
tgc tcc tgt agt gat caa act	gga cag tgc agc tgt	aag gtg aat	3459
Cys Ser Cys Ser Asp Gln Thr	Gly Gln Cys Ser Cys	Lys Val Asn	
1100	1105	1110	
gtg gaa ggc gtc cac tgt gac	agg tgc cgg cct ggc	aaa ttt gga	3504
Val Glu Gly Val His Cys Asp	Arg Cys Arg Pro Gly	Lys Phe Gly	
1115	1120	1125	
cta gat gcc aag aac cca ctt	ggc tgc agc agc tgc	tac tgc ttt	3549
Leu Asp Ala Lys Asn Pro Leu	Gly Cys Ser Ser Cys	Tyr Cys Phe	
1130	1135	1140	
gga gtt act agt caa tgc tct	gaa gca aag ggg ctg	atc cgt acg	3594
Gly Val Thr Ser Gln Cys Ser	Glu Ala Lys Gly Leu	Ile Arg Thr	
1145	1150	1155	
tgg gtg act ttg agt gat gaa	cag acc att cta cct	ctg gtg gat	3639
Trp Val Thr Leu Ser Asp Glu	Gln Thr Ile Leu Pro	Leu Val Asp	
1160	1165	1170	
gag gcc ctg cag cac acg act	acc aaa ggc att gct	ttc cag aaa	3684
Glu Ala Leu Gln His Thr Thr	Thr Lys Gly Ile Ala	Phe Gln Lys	
1175	1180	1185	

cca gag att gtt gca aag atg gat gaa gtc agg caa gag ctc cat 3729

Pro Glu Ile Val Ala Lys Met Asp Glu Val Arg Gln Glu Leu His

1190

1195

1200

ttg gaa cct ttt tac tgg aaa ctc cca caa caa ttt gaa ggg aaa 3774

Leu Glu Pro Phe Tyr Trp Lys Leu Pro Gln Gln Phe Glu Gly Lys

1205

1210

1215

aag ttg atg gct tat ggt ggc aaa ctc aag tat gcc atc tat ttt 3819

Lys Leu Met Ala Tyr Gly Gly Lys Leu Lys Tyr Ala Ile Tyr Phe

1220

1225

1230

gag gct cgg gat gag aca ggc ttt gcc aca tat aaa cct caa gtt 3864

Glu Ala Arg Asp Glu Thr Gly Phe Ala Thr Tyr Lys Pro Gln Val

1235

1240

1245

atc att cga ggt gga act cct act cat gct aga att att acc aga 3909

Ile Ile Arg Gly Gly Thr Pro Thr His Ala Arg Ile Ile Thr Arg

1250

1255

1260

cac atg gct gcc cct ctc att ggc cag ttg aca cgg cat gaa ata 3954

His Met Ala Ala Pro Leu Ile Gly Gln Leu Thr Arg His Glu Ile

1265

1270

1275

gaa atg aca gag aaa gaa tgg aaa tat tat ggt gat gat cct cga 3999

Glu Met Thr Glu Lys Glu Trp Lys Tyr Tyr Gly Asp Asp Pro Arg

1280	1285	1290	
atc agt	aga act gtg acc cgt	gaa gac ttc ttg gat	ata cta tat 4044
Ile Ser	Arg Thr Val Thr Arg	Glu Asp Phe Leu Asp	Ile Leu Tyr
1295	1300	1305	
gat att	cac tat atc ctt atc	aag gct act tat gga	aac gtt gtg 4089
Asp Ile	His Tyr Ile Leu Ile	Lys Ala Thr Tyr Gly	Asn Val Val
1310	1315	1320	
aga caa	agc cgc att tct gaa	atc tcc atg gaa gta	gct gaa cca 4134
Arg Gln	Ser Arg Ile Ser Glu	Ile Ser Met Glu Val	Ala Glu Pro
1325	1330	1335	
gga cat	gta tta gca ggg agc	cca cca gca cac ttg	ata gaa aga 4179
Gly His	Val Leu Ala Gly Ser	Pro Pro Ala His Leu	Ile Glu Arg
1340	1345	1350	
tgc gat	tgc cct cct ggc tat	tct ggc ttg tct tgt	gag acg tgt 4224
Cys Asp	Cys Pro Pro Gly Tyr	Ser Gly Leu Ser Cys	Glu Thr Cys
1355	1360	1365	
gca cca	gga ttt tac cga ctt	cgt tct gaa cca ggt	ggg cgg act 4269
Ala Pro	Gly Phe Tyr Arg Leu	Arg Ser Glu Pro Gly	Gly Arg Thr
1370	1375	1380	

cct gga cca acc tta ggg acc tgt gtt ccc tgc caa tgt aat gga 4314

Pro Gly .Pro Thr Leu Gly Thr Cys Val Pro Cys Gln Cys Asn Gly

1385

1390

1395

cac agc agt cag tgt gat cct gag acc tca gta tgc cag aat tgt 4359

His Ser Ser Gln Cys Asp Pro Glu Thr Ser Val Cys Gln Asn Cys

1400

1405

1410

cag cat cac act gct ggt gac ttc tgt gag cgc tgt gcc ctt ggc 4404

Gln His His Thr Ala Gly Asp Phe Cys Glu Arg Cys Ala Leu Gly

1415

1420

1425

tac tat gga atc gtc agg gga ttg cca aat gac tgc caa cca tgt 4449

Tyr Tyr Gly Ile Val Arg Gly Leu Pro Asn Asp Cys Gln Pro Cys

1430

1435

1440

gct tgt cct ctg att tcg ccc agc aac aat ttc agc ccc tot tgt 4494

Ala Cys Pro Leu Ile Ser Pro Ser Asn Asn Phe Ser Pro Ser Cys

1445

1450

1455

gta ttg gaa ggt ctg gaa gat tac cgt tgc acc gcc tgc cca agg 4539

Val Leu Glu Gly Leu Glu Asp Tyr Arg Cys Thr Ala Cys Pro Arg

1460

1465

1470

ggc tat gaa gga cag tac tgt gaa agg tgt gcc cca ggc tat act 4584

Gly Tyr Glu Gly Gln Tyr Cys Glu Arg Cys Ala Pro Gly Tyr Thr

1475	1480	1485	
ggc agc cca agc agc ccc gga ggc tcc tgc caa gaa tgt gag tgt	4629		
Gly Ser Pro Ser Ser Pro Gly Gly Ser Cys Gln Glu Cys Glu Cys			
1490	1495	1500	
gac cct tat ggc tcc cta ccg gtt ccc tgt gac cgg gtc aca gga	4674		
Asp Pro Tyr Gly Ser Leu Pro Val Pro Cys Asp Arg Val Thr Gly			
1505	1510	1515	
ctc tgc acg tgc cgc cct gga gcc aca gga agg aag tgt gat ggc	4719		
Leu Cys Thr Cys Arg Pro Gly Ala Thr Gly Arg Lys Cys Asp Gly			
1520	1525	1530	
tgc gag cac tgg cat gca cgc gag ggt gca gag tgt gtc ttt tgt	4764		
Cys Glu His Trp His Ala Arg Glu Gly Ala Glu Cys Val Phe Cys			
1535	1540	1545	
gga gac gag tgt aca ggc ctt ctt ctt ggt gac ctg gct cgt cta	4809		
Gly Asp Glu Cys Thr Gly Leu Leu Leu Gly Asp Leu Ala Arg Leu			
1550	1555	1560	
gag cag atg acc atg aac atc aac ctc acg ggc cca ctg cct gct	4854		
Glu Gln Met Thr Met Asn Ile Asn Leu Thr Gly Pro Leu Pro Ala			
1565	1570	1575	

cca tat aaa att ctg tat ggt ctt gaa aat aca act cag gaa ctc 4899

Pro Tyr Lys Ile Leu Tyr Gly Leu Glu Asn Thr Thr Gln Glu Leu

1580

1585

1590

aag cac ctg cta tca ccg caa cgg gca cca gag agg ctc att cag 4944

Lys His Leu Leu Ser Pro Gln Arg Ala Pro Glu Arg Leu Ile Gln

1595

1600

1605

ttg gca gag ggc aac gtg aac aca ctt gtg atg gaa aca aat gag 4989

Leu Ala Glu Gly Asn Val Asn Thr Leu Val Met Glu Thr Asn Glu

1610

1615

1620

ctg cta acc aga gca acc aaa gtg aca gca gat ggt gag caa aca 5034

Leu Leu Thr Arg Ala Thr Lys Val Thr Ala Asp Gly Glu Gln Thr

1625

1630

1635

gga caa gat gct gag agg acc aac tcc aga gca gaa tcc ttg gaa 5079

Gly Gln Asp Ala Glu Arg Thr Asn Ser Arg Ala Glu Ser Leu Glu

1640

1645

1650

gaa ttc att aaa ggg ctt gtc cag gat gct gaa gcc ata aat gaa 5124

Glu Phe Ile Lys Gly Leu Val Gln Asp Ala Glu Ala Ile Asn Glu

1655

1660

1665

aaa gct gta aaa cta aat gaa acc tta gga aat caa gat aag aca 5169

Lys Ala Val Lys Leu Asn Glu Thr Leu Gly Asn Gln Asp Lys Thr

1670	1675	1680	
gca gag aga aac ttg gag gag ctt caa aag gaa atc gac cgg atg			5214
Ala Glu Arg Asn Leu Glu Glu Leu Gln Lys Glu Ile Asp Arg Met			
1685	1690	1695	
ctg aag gaa ctg aga agt aaa gat ctt caa aca cag aag gaa gtt			5259
Leu Lys Glu Leu Arg Ser Lys Asp Leu Gln Thr Gln Lys Glu Val			
1700	1705	1710	
gct gag gat gag ctc gtg gca gca gaa ggc ctt ctg aag aga gta			5304
Ala Glu Asp Glu Leu Val Ala Ala Glu Gly Leu Leu Lys Arg Val			
1715	1720	1725	
aac aag ctg ttt gga gag ccc aga gcc cag aat gaa gat atg gaa			5349
Asn Lys Leu Phe Gly Glu Pro Arg Ala Gln Asn Glu Asp Met Glu			
1730	1735	1740	
aag gat ctc cag cag aaa ctg gca gag tac aag aac aaa ctt gat			5394
Lys Asp Leu Gln Gln Lys Leu Ala Glu Tyr Lys Asn Lys Leu Asp			
1745	1750	1755	
gat gct tgg gat cta ttg aga gaa gcc act gat aaa acc cga gat			5439
Asp Ala Trp Asp Leu Leu Arg Glu Ala Thr Asp Lys Thr Arg Asp			
1760	1765	1770	

gct aat cgt ttg tct gct gcc aat caa aaa aac atg acc ata ctg	5484
Ala Asn Arg Leu Ser Ala Ala Asn Gln Lys Asn Met Thr Ile Leu	
1775 1780 1785	
 gag aca aag aag gag gct att gaa ggt agc aaa cga caa ata gag	5529
Glu Thr Lys Lys Glu Ala Ile Glu Gly Ser Lys Arg Gln Ile Glu	
1790 1795 1800	
 aac act tta aag gaa ggc aat gac atc ctt gat gaa gcc aat caa	5574
Asn Thr Leu Lys Glu Gly Asn Asp Ile Leu Asp Glu Ala Asn Gln	
1805 1810 1815	
 ctc tta ggt gaa atc aac tca gtc ata gat tat gtc gac gac att	5619
Leu Leu Gly Glu Ile Asn Ser Val Ile Asp Tyr Val Asp Asp Ile	
1820 1825 1830	
 aaa act aag ttg cca cca atg tcc gag gag ctg agt gac aaa ata	5664
Lys Thr Lys Leu Pro Pro Met Ser Glu Glu Leu Ser Asp Lys Ile	
1835 1840 1845	
 gat gac ctc gcc cag gaa ata aag gac aga agg ctt gct gag aag	5709
Asp Asp Leu Ala Gln Glu Ile Lys Asp Arg Arg Leu Ala Glu Lys	
1850 1855 1860	
 gtg ttc cag gct gag agc cat gct gct cag ctg aac gac tcg tct	5754
Val Phe Gln Ala Glu Ser His Ala Ala Gln Leu Asn Asp Ser Ser	

1865	1870	1875	
gct gta ctt gat gga atc ctg gat gag gct aag aac atc tct ttc			5799
Ala Val Leu Asp Gly Ile Leu Asp Glu Ala Lys Asn Ile Ser Phe			
1880	1885	1890	
aat gcc acg gca gcc ttc aga gct tac agt aat att aaa gac tac			5844
Asn Ala Thr Ala Ala Phe Arg Ala Tyr Ser Asn Ile Lys Asp Tyr			
1895	1900	1905	
att gat gaa gct gag aaa gtg gcc aga gaa gcc aaa gag ctt gcc			5889
Ile Asp Glu Ala Glu Lys Val Ala Arg Glu Ala Lys Glu Leu Ala			
1910	1915	1920	
caa ggg gct aca aaa ctg gca aca agt cct cag ggc tta tta aaa			5934
Gln Gly Ala Thr Lys Leu Ala Thr Ser Pro Gln Gly Leu Leu Lys			
1925	1930	1935	
gaa gat gcc aaa ggc tcc ctt cag aaa agc ttc agg atc ctc aat			5979
Glu Asp Ala Lys Gly Ser Leu Gln Lys Ser Phe Arg Ile Leu Asn			
1940	1945	1950	
gaa gcc aag aag cta gca aac gat gtg aaa gga aat cac aat gat			6024
Glu Ala Lys Lys Leu Ala Asn Asp Val Lys Gly Asn His Asn Asp			
1955	1960	1965	

cta aat	gac ctg aaa acc agg	tta gaa act gct gac	ctt aga aac	6069
Leu Asn	Asp Leu Lys Thr Arg	Leu Glu Thr Ala Asp	Leu Arg Asn	
1970	1975	1980		
agt gga	ctt cta gga gct cta	aat gac acc atg gac	aag tta tca	6114
Ser Gly	Leu Leu Gly Ala Leu	Asn Asp Thr Met Asp	Lys Leu Ser	
1985	1990	1995		
gcc att	aca aat gac acg gct	gct aaa ctg cag gct	gtc aaa gag	6159
Ala Ile	Thr Asn Asp Thr Ala	Ala Lys Leu Gln Ala	Val Lys Glu	
2000	2005	2010		
aaa gcc	aga gaa gcc aat gac	aca gca aaa gct gtc	ctg gcc cag	6204
Lys Ala	Arg Glu Ala Asn Asp	Thr Ala Lys Ala Val	Leu Ala Gln	
2015	2020	2025		
gtt aag	gac ctg cat cag aac	cta gat ggc ctg aag	caa aac tac	6249
Val Lys	Asp Leu His Gln Asn	Leu Asp Gly Leu Lys	Gln Asn Tyr	
2030	2035	2040		
aat aaa	ctg gca gac agc gtg	gcc aaa acg aac gct	gtg gtg aaa	6294
Asn Lys	Leu Ala Asp Ser Val	Ala Lys Thr Asn Ala	Val Val Lys	
2045	2050	2055		
gat cct	tcc aaa aac aaa atc	att gca gat gca ggc	act tcc gtg	6339
Asp Pro	Ser Lys Asn Lys Ile	Ile Ala Asp Ala Gly	Thr Ser Val	

2060	2065	2070	
aga aat cta gaa cag gaa gct	gac cgg cta atc gac	aaa ctc aag	6384
Arg Asn. Leu Glu Gln Glu Ala	Asp Arg Leu Ile Asp	Lys Leu Lys	
2075	2080	2085	
ccc atc aag gag ctt gag gac	aac cta aag aaa aac	att tct gaa	6429
Pro Ile Lys Glu Leu Glu Asp	Asn Leu Lys Lys Asn	Ile Ser Glu	
2090	2095	2100	
ata aag gaa ctg atc aac caa	gct cgg aaa caa gct	aac tct atc	6474
Ile Lys Glu Leu Ile Asn Gln	Ala Arg Lys Gln Ala	Asn Ser Ile	
2105	2110	2115	
aaa gta tct gtt tct tcg gga	ggt gac tgt gtt cgg	aca tac agg	6519
Lys Val Ser Val Ser Ser Gly	Gly Asp Cys Val Arg	Thr Tyr Arg	
2120	2125	2130	
cca gaa atc aag aaa gga agc	tac aat aac atc gtt	gtc cat gtc	6564
Pro Glu Ile Lys Lys Gly Ser	Tyr Asn Asn Ile Val	Val His Val	
2135	2140	2145	
aag acc gct gtt gcc gac aac	ctc ctt ttt tat ott	gga agt gcc	6609
Lys Thr Ala Val Ala Asp Asn	Leu Leu Phe Tyr Leu	Gly Ser Ala	
2150	2155	2160	

aaa ttt att gac ttt ott gct ata gaa atg cgc aaa ggc aaa gtc 6654

Lys Phe Ile Asp Phe Leu Ala Ile Glu Met Arg Lys Gly Lys Val

2165

2170

2175

agc ttc ctc tgg att gtt ggc tct gga gtt ggc cga gta ggg ttt 6699

Ser Phe Leu Trp Ile Val Gly Ser Gly Val Gly Arg Val Gly Phe

2180

2185

2190

cca gac ttg acc atc gac gac tcc tat tgg tac cgt att gaa gca 6744

Pro Asp Leu Thr Ile Asp Asp Ser Tyr Trp Tyr Arg Ile Glu Ala

2195

2200

2205

tca aga acg gga aga aat gga tct att tct gtg aga gct tta gat 6789

Ser Arg Thr Gly Arg Asn Gly Ser Ile Ser Val Arg Ala Leu Asp

2210

2215

2220

gga ccc aaa gcc agt atg gta ccc agc acc tac cat tca gtg tct 6834

Gly Pro Lys Ala Ser Met Val Pro Ser Thr Tyr His Ser Val Ser

2225

2230

2235

cct ccc ggg tat act atc cta gat gtg gat gca aat gca atg ctg 6879

Pro Pro Gly Tyr Thr Ile Leu Asp Val Asp Ala Asn Ala Met Leu

2240

2245

2250

ttt gtt ggt ggc ctg acc gga aaa ata aag aag gcc gat gct gta 6924

Phe Val Gly Gly Leu Thr Gly Lys Ile Lys Lys Ala Asp Ala Val

2255	2260	2265	
ogt gtg atc acc ttc acc ggc tgt atg gga gaa aca tac ttt gac			6969
Arg Val Ile Thr Phe Thr Gly Cys Met Gly Glu Thr Tyr Phe Asp			
2270	2275	2280	
aac aaa cct ata ggt tta tgg aac ttc cgg gag aaa gaa ggc gac			7014
Asn Lys Pro Ile Gly Leu Trp Asn Phe Arg Glu Lys Glu Gly Asp			
2285	2290	2295	
tgt aag gga tgt act gtc agc cca caa gtg gaa gat agt gag ggg			7059
Cys Lys Gly Cys Thr Val Ser Pro Gln Val Glu Asp Ser Glu Gly			
2300	2305	2310	
act att cag ttt gat ggt gaa ggc tat gca tta gtg agc cgg ccc			7104
Thr Ile Gln Phe Asp Gly Glu Gly Tyr Ala Leu Val Ser Arg Pro			
2315	2320	2325	
atc cgc tgg tac ccc aac atc tcc aca gtc atg ttc aag ttc cgg			7149
Ile Arg Trp Tyr Pro Asn Ile Ser Thr Val Met Phe Lys Phe Arg			
2330	2335	2340	
aca ttt tca tca agt gct ctc ctg atg tat ctt gcc aca cga gac			7194
Thr Phe Ser Ser Ser Ala Leu Leu Met Tyr Leu Ala Thr Arg Asp			
2345	2350	2355	

ctg aaa gat ttc atg agt gta gag ctc agt gat gga cat gtg aaa 7239

Leu Lys Asp Phe Met Ser Val Glu Leu Ser Asp Gly His Val Lys

2360

2365

2370

gtc agc tat gac ctg ggc tca gga atg act tcc gtt gtc agc aat 7284

Val Ser Tyr Asp Leu Gly Ser Gly Met Thr Ser Val Val Ser Asn

2375

2380

2385

caa aac cat aat gat ggg aaa tgg aaa gca ttc acg ctg tgc cgg 7329

Gln Asn His Asn Asp Gly Lys Trp Lys Ala Phe Thr Leu Ser Arg

2390

2395

2400

att cag aaa caa gcc aac ata tgc att gtc gac atc gat tct aac 7374

Ile Gln Lys Gln Ala Asn Ile Ser Ile Val Asp Ile Asp Ser Asn

2405

2410

2415

cag gag gag aat gta gct act tca tct tct gga aac aac ttt ggt 7419

Gln Glu Glu Asn Val Ala Thr Ser Ser Ser Gly Asn Asn Phe Gly

2420

2425

2430

ctt gac ttg aaa gca gat gac aaa ata tat ttt ggt ggc ctg cca 7464

Leu Asp Leu Lys Ala Asp Asp Lys Ile Tyr Phe Gly Gly Leu Pro

2435

2440

2445

act ctg aga aac ttg agt atg aaa gca agg cca gaa gtc aat gtg 7509

Thr Leu Arg Asn Leu Ser Met Lys Ala Arg Pro Glu Val Asn Val

2450	2455	2460	
aag aaa tac tcc ggc tgc ctc	aaa gat att gaa att	tca aga aca	7554
Lys Lys Tyr Ser Gly Cys Leu	Lys Asp Ile Glu Ile	Ser Arg Thr	
2465	2470	2475	
cct tac aat ata ctc agc agc	cct gat tat gtt ggt	gtg acc aaa	7599
Pro Tyr Asn Ile Leu Ser Ser	Pro Asp Tyr Val Gly	Val Thr Lys	
2480	2485	2490	
ggc tgt tca ctg gag aat gtt	aat aca gtt agt ttc	ccc aag cct	7644
Gly Cys Ser Leu Glu Asn Val	Asn Thr Val Ser Phe	Pro Lys Pro	
2495	2500	2505	
ggt ttt gtg gag ctt gcc gct	gtg tct att gat gtt	gga aca gaa	7689
Gly Phe Val Glu Leu Ala Ala	Val Ser Ile Asp Val	Gly Thr Glu	
2510	2515	2520	
atc aat ctg tcc ttt agt acc	agg aac gag tct ggg	atc att ctc	7734
Ile Asn Leu Ser Phe Ser Thr	Arg Asn Glu Ser Gly	Ile Ile Leu	
2525	2530	2535	
ttg gga agt gga ggg aca ctc	aca cca ccc agg aga	aaa cgg aga	7779
Leu Gly Ser Gly Gly Thr Leu	Thr Pro Pro Arg Arg	Lys Arg Arg	
2540	2545	2550	

caa acc aca cag gct tat tat gcc ata ttc ctc aac aag ggc cgc 7824

Gln Thr Thr Gln Ala Tyr Tyr Ala Ile Phe Leu Asn Lys Gly Arg

2555

2560

2565

ttg gaa gtg cat ctc tcc tcg ggg aca cgg aca atg agg aaa att 7869

Leu Glu Val His Leu Ser Ser Gly Thr Arg Thr Met Arg Lys Ile

2570

2575

2580

gtc atc aaa ccg gag cca aat ttg ttt cat gat ggg aga gaa cat 7914

Val Ile Lys Pro Glu Pro Asn Leu Phe His Asp Gly Arg Glu His

2585

2590

2595

tct gtc cac gta gaa aga acc aga ggc atc ttc act gtt caa att 7959

Ser Val His Val Glu Arg Thr Arg Gly Ile Phe Thr Val Gln Ile

2600

2605

2610

gat gaa gac aga aga cat atc caa aac ctg aca gag gaa cag ccc 8004

Asp Glu Asp Arg Arg His Ile Gln Asn Leu Thr Glu Glu Gln Pro

2615

2620

2625

atc gaa gtg aaa aag ctc ttt gtc ggg ggt gct cct cct gaa ttt 8049

Ile Glu Val Lys Lys Leu Phe Val Gly Gly Ala Pro Pro Glu Phe

2630

2635

2640

cag ccc tcc cca ctc agg aat att ccg gcc ttt caa ggc tgt gtg 8094

Gln Pro Ser Pro Leu Arg Asn Ile Pro Ala Phe Gln Gly Cys Val

2645	2650	2655	
tgg aac ctt gtt att aac tcc	atc ccc atg gac ttt	gcg cag cct	8139
Trp Asn Leu Val Ile Asn Ser	Ile Pro Met Asp Phe	Ala Gln Pro	
2660	2665	2670	
ata gcc ttc aaa aat gcc gac	att ggt cgc tgt acc	tat caa aag	8184
Ile Ala Phe Lys Asn Ala Asp	Ile Gly Arg Cys Thr	Tyr Gln Lys	
2675	2680	2685	
ccc cgg gaa gat gag agt gaa	gca gtt cca gct gaa	gtt att gtc	8229
Pro Arg Glu Asp Glu Ser Glu	Ala Val Pro Ala Glu	Val Ile Val	
2690	2695	2700	
cag cct cag tcg gtg ccc acc	cct gcc ttc cct ttc	cca gtc ccc	8274
Gln Pro Gln Ser Val Pro Thr	Pro Ala Phe Pro Phe	Pro Val Pro	
2705	2710	2715	
acc atg gtg cat ggc cct tgt	gtt gca gaa tca gaa	cca gct ctt	8319
Thr Met Val His Gly Pro Cys	Val Ala Glu Ser Glu	Pro Ala Leu	
2720	2725	2730	
ctg aca ggg agc aag cag ttt	ggg ctt tcc aga aac	agc cac att	8364
Leu Thr Gly Ser Lys Gln Phe	Gly Leu Ser Arg Asn	Ser His Ile	
2735	2740	2745	

gca att gtc ttt gat gac acc aaa gtt aaa aac cgc ctc acc att 8409

Ala Ile Val Phe Asp Asp Thr Lys Val Lys Asn Arg Leu Thr Ile

2750

2755

2760

gag ctg gag gta cga act gaa gct gaa tca ggc ttg ctc ttc tac 8454

Glu Leu Glu Val Arg Thr Glu Ala Glu Ser Gly Leu Leu Phe Tyr

2765

2770

2775

atg ggt cgg atc aat cat gct gat ttt ggt act gtt cag ctg agg 8499

Met Gly Arg Ile Asn His Ala Asp Phe Gly Thr Val Gln Leu Arg

2780

2785

2790

aat ggg ttc ccg ttc ttc agt tat gat ttg ggg agt ggg agc acc 8544

Asn Gly Phe Pro Phe Phe Ser Tyr Asp Leu Gly Ser Gly Ser Thr

2795

2800

2805

aga acc atg atc ccc aca aaa atc aac gat ggt cag tgg cac aag 8589

Arg Thr Met Ile Pro Thr Lys Ile Asn Asp Gly Gln Trp His Lys

2810

2815

2820

att aag att gtg aga gtg aag cag gag gga att ctt tat gtg gat 8634

Ile Lys Ile Val Arg Val Lys Gln Glu Gly Ile Leu Tyr Val Asp

2825

2830

2835

gat gcc toc agc caa acc atc agt ccc aag aaa gcc gac atc ctg 8679

Asp Ala Ser Ser Gln Thr Ile Ser Pro Lys Lys Ala Asp Ile Leu

2840	2845	2850	
gat gtc	ggg ggg att ctg tat	gtc ggt gga ttg ccg	atc aac tat 8724
Asp Val	Gly Gly Ile Leu Tyr	Val Gly Gly Leu Pro	Ile Asn Tyr
2855	2860	2865	
acc aca	cgc aga att ggt cca	gtg act tac agc ctg	gat ggc tgt 8769
Thr Thr	Arg Arg Ile Gly Pro	Val Thr Tyr Ser Leu	Asp Gly Cys
2870	2875	2880	
gtt agg	aat ctt cac atg gaa	caa gcc cct gtt gat	ctg gac cag 8814
Val Arg	Asn Leu His Met Glu	Gln Ala Pro Val Asp	Leu Asp Gln
2885	2890	2895	
cct acc	tcc agc ttt cac gtt	ggg aca tgc ttt gcg	aat gca gag 8859
Pro Thr	Ser Ser Phe His Val	Gly Thr Cys Phe Ala	Asn Ala Glu
2900	2905	2910	
agt ggg	act tac ttt gat gga	acc ggt ttt ggt aaa	gca gtt ggt 8904
Ser Gly	Thr Tyr Phe Asp Gly	Thr Gly Phe Gly Lys	Ala Val Gly
2915	2920	2925	
ggg ttc	atc gtt gga ttg gac	ctt ctt gtg gaa ttt	gaa ttc cgt 8949
Gly Phe	Ile Val Gly Leu Asp	Leu Leu Val Glu Phe	Glu Phe Arg
2930	2935	2940	

acc aca aga ccc act ggg gtc ctc ctg ggg atc agc agt cag aag 8994

Thr Thr Arg Pro Thr Gly Val Leu Leu Gly Ile Ser Ser Gln Lys

2945

2950

2955

atg gat gga atg ggt att gaa atg atc gac gag aag ctt atg ttc 9039

Met Asp Gly Met Gly Ile Glu Met Ile Asp Glu Lys Leu Met Phe

2960

2965

2970

cac gtg gat aat ggc gct ggc cga ttc act gca att tat gat gct 9084

His Val Asp Asn Gly Ala Gly Arg Phe Thr Ala Ile Tyr Asp Ala

2975

2980

2985

gag atc cca ggc cac atg tgc aat gga cag tgg tat aaa gtc act 9129

Glu Ile Pro Gly His Met Cys Asn Gly Gln Trp Tyr Lys Val Thr

2990

2995

3000

gcc aag aag atc aaa aac cgt ctt gag ctg gtg gta gat ggg aac 9174

Ala Lys Lys Ile Lys Asn Arg Leu Glu Leu Val Val Asp Gly Asn

3005

3010

3015

cag gtg gat gcc cag agc cca aac tca gca tog aca tca gct gat 9219

Gln Val Asp Ala Gln Ser Pro Asn Ser Ala Ser Thr Ser Ala Asp

3020

3025

3030

aca aac gac cct gtt ttc gtt ggc ggt ttc cca ggt ggc ctc aat 9264

Thr Asn Asp Pro Val Phe Val Gly Gly Phe Pro Gly Gly Leu Asn

3035 3040 3045

cag ttt ggc ctg acc acc aac att agg ttc cga ggc tgc atc oga 9309

Gln Phe Gly Leu Thr Thr Asn Ile Arg Phe Arg Gly Cys Ile Arg

3050 3055 3060

tct ctg aag ctc acc aaa ggc act gca aac cgc tgg agg tta att 9354

Ser Leu Lys Leu Thr Lys Gly Thr Ala Asn Arg Trp Arg Leu Ile

3065 3070 3075

ttg cca agg ccc tgg aac tgaggggtgt tcaacctgta tcatgccga 9402

Leu Pro Arg Pro Trp Asn

3080

ctaccttaata aagatagttc aatcctgagg agaattcatc aaaacaagta tatcaagtta 9462

aacaatatac actcctatca tattaataaaa actaatgtgc agcggccgc 9511

<210> 6

<211> 3084

<212> PRT

<213> Mus musculus

<400> 6

Gln Arg Arg Gln Ser Gln Ala His Gln Gln Arg Gly Leu Phe Pro Ala

1 5 10 15

Val Leu Asn Leu Ala Ser Asn Ala Leu Ile Thr Thr Asn Ala Thr Cys

20 25 30

Gly Glu Lys Gly Pro Glu Met Tyr Cys Lys Leu Val Glu His Val Pro

35 40 45

Gly Gln Pro Val Arg Asn Pro Gln Cys Arg Ile Cys Asn Gln Asn Ser

50 55 60

Ser Asn Pro Tyr Gln Arg His Pro Ile Thr Asn Ala Ile Asp Gly Lys

65 70 75 80

Asn Thr Trp Trp Gln Ser Pro Ser Ile Lys Asn Gly Val Glu Tyr His

85 90 95

Tyr Val Thr Ile Thr Leu Asp Leu Gln Gln Val Phe Gln Ile Ala Tyr

100 105 110

Val Ile Val Lys Ala Ala Asn Ser Pro Arg Pro Gly Asn Trp Ile Leu

115

120

125

Glu Arg Ser Leu Asp Asp Val Glu Tyr Lys Pro Trp Gln Tyr His Ala

130

135

140

Val Thr Asp Thr Glu Cys Leu Thr Leu Tyr Asn Ile Tyr Pro Arg Thr

145

150

155

160

Gly Pro Pro Ser Tyr Ala Lys Asp Asp Glu Val Ile Cys Thr Ser Phe

165

170

175

Tyr Ser Lys Ile His Pro Leu Glu Asn Gly Glu Ile His Ile Ser Leu

180

185

190

Ile Asn Gly Arg Pro Ser Ala Asp Asp Pro Ser Pro Glu Leu Leu Glu

195

200

205

Phe Thr Ser Ala Arg Tyr Ile Arg Leu Arg Phe Gln Arg Ile Arg Thr

210

215

220

Leu Asn Ala Asp Leu Met Met Phe Ala His Lys Asp Pro Arg Glu Ile

225

230

235

240

Asp Pro Ile Val Thr Arg Arg Tyr Tyr Tyr Ser Val Lys Asp Ile Ser

245

250

255

Val Gly Gly Met Cys Ile Cys Tyr Gly His Ala Arg Ala Cys Pro Leu

260

265

270

Asp Pro Ala Thr Asn Lys Ser Arg Cys Glu Cys Glu His Asn Thr Cys

275

280

285

Gly Glu Ser Cys Asp Arg Cys Cys Pro Gly Phe His Gln Lys Pro Trp

290

295

300

Arg Ala Gly Thr Phe Leu Thr Lys Ser Glu Cys Glu Ala Cys Asn Cys

305

310

315

320

His Gly Lys Ala Glu Glu Cys Tyr Tyr Asp Glu Thr Val Ala Ser Arg

325

330

335

Asn Leu Ser Leu Asn Ile His Gly Lys Tyr Ile Gly Gly Gly Val Cys

340

345

350

Ile Asn Cys Thr His Asn Thr Ala Gly Ile Asn Cys Glu Thr Cys Val

355

360

365

Asp Gly Phe Phe Arg Pro Lys Gly Val Ser Pro Asn Tyr Pro Arg Pro

370

375

380

Cys Gln Pro Cys His Cys Asp Pro Thr Gly Ser Leu Ser Glu Val Cys

385

390

395

400

Val Lys Asp Glu Lys Tyr Ala Gln Arg Gly Leu Lys Pro Gly Ser Cys

405

410

415

His Cys Lys Thr Gly Phe Gly Gly Val Asn Cys Asp Arg Cys Val Arg

420

425

430

Gly Tyr His Gly Tyr Pro Asp Cys Gln Pro Cys Asn Cys Ser Gly Leu

435

440

445

Gly Ser Thr Asn Glu Asp Pro Cys Val Gly Pro Cys Ser Cys Lys Glu

450

455

460

Asn Val Glu Gly Glu Asp Cys Ser Arg Cys Lys Ser Gly Phe Phe Asn

465

470

475

480

Leu Gln Glu Asp Asn Gln Lys Gly Cys Glu Glu Cys Phe Cys Ser Gly

485

490

495

Val Ser Asn Arg Cys Gln Ser Ser Tyr Trp Thr Tyr Gly Asn Ile Gln

500

505

510

Asp Met Arg Gly Trp Tyr Leu Thr Asp Leu Ser Gly Arg Ile Arg Met

515

520

525

Ala Pro Gln Leu Asp Asn Pro Asp Ser Pro Gln Gln Ile Ser Ile Ser

530

535

540

Asn Ser Glu Ala Arg Lys Ser Leu Leu Asp Gly Tyr Tyr Trp Ser Ala

545

550

555

560

Pro Pro Pro Tyr Leu Gly Asn Arg Leu Pro Ala Val Gly Gly Gln Leu

565

570

575

Ser Phe Thr Ile Ser Tyr Asp Leu Glu Glu Glu Glu Asp Asp Thr Glu

580

585

590

Lys Leu Leu Gln Leu Met Ile Ile Phe Glu Gly Asn Asp Leu Arg Ile

595

600

605

Ser Thr Ala Tyr Lys Glu Val Tyr Leu Glu Pro Ser Glu Glu His Val

610

615

620

Glu Glu Val Ser Leu Lys Glu Glu Ala Phe Thr Ile His Gly Thr Asn

625 630 635 640

Leu Pro Val Thr Arg Lys Asp Phe Met Ile Val Leu Thr Asn Leu Gly

645 650 655

Glu Ile Leu Ile Gln Ile Thr Tyr Asn Leu Gly Met Asp Ala Ile Phe

660 665 670

Arg Leu Ser Ser Val Asn Leu Glu Ser Pro Val Pro Tyr Pro Thr Asp

675 680 685

Arg Arg Ile Ala Thr Asp Val Glu Val Cys Gln Cys Pro Pro Gly Tyr

690 695 700

Ser Gly Ser Ser Cys Glu Thr Cys Trp Pro Arg His Arg Arg Val Asn

705 710 715 720

Gly Thr Ile Phe Gly Gly Ile Cys Glu Pro Cys Gln Cys Phe Ala His

725 730 735

Ala Glu Ala Cys Asp Asp Ile Thr Gly Glu Cys Leu Asn Cys Lys Asp

740

745

750

His Thr Gly Gly Pro Tyr Cys Asn Glu Cys Leu Pro Gly Phe Tyr Gly

755

760

765

Asp Pro Thr Arg Gly Ser Pro Glu Asp Cys Gln Pro Cys Ala Cys Pro

770

775

780

Leu Asn Ile Pro Ser Asn Asn Phe Ser Pro Thr Cys His Leu Asp Arg

785

790

795

800

Ser Leu Gly Leu Ile Cys Asp Glu Cys Pro Ile Gly Tyr Thr Gly Pro

805

810

815

Arg Cys Glu Arg Cys Ala Glu Gly Tyr Phe Gly Gln Pro Ser Val Pro

820

825

830

Gly Gly Ser Cys Gln Pro Cys Gln Cys Asn Asp Asn Leu Asp Tyr Ser

835

840

845

Ile Pro Gly Ser Cys Asp Ser Leu Ser Gly Ser Cys Leu Ile Cys Lys

850

855

860

Pro Gly Thr Thr Gly Arg Tyr Cys Glu Leu Cys Ala Asp Gly Tyr Phe

865

870

875

880

Gly Asp Ala Val Asn Thr Lys Asn Cys Gln Pro Cys Arg Cys Asp Ile

885

890

895

Asn Gly Ser Phe Ser Glu Asp Cys His Thr Arg Thr Gly Gln Cys Glu

900

905

910

Cys Arg Pro Asn Val Gln Gly Arg His Cys Asp Glu Cys Lys Pro Glu

915

920

925

Thr Phe Gly Leu Gln Leu Gly Arg Gly Cys Leu Pro Cys Asn Cys Asn

930

935

940

Ser Phe Gly Ser Lys Ser Phe Asp Cys Glu Ala Ser Gly Gln Cys Trp

945 950 955 960

Cys Gln Pro Gly Val Ala Gly Lys Lys Cys Asp Arg Cys Ala His Gly

965 970 975

Tyr Phe Asn Phe Gln Glu Gly Gly Cys Ile Ala Cys Asp Cys Ser His

980 985 990

Leu Gly Asn Asn Cys Asp Pro Lys Thr Gly Gln Cys Ile Cys Pro Pro

995 1000 1005

Asn Thr Thr Gly Glu Lys Cys Ser Glu Cys Leu Pro Asn Thr Trp

1010 1015 1020

Gly His Ser Ile Val Thr Gly Cys Lys Val Cys Asn Cys Ser Thr

1025 1030 1035

Val Gly Ser Leu Ala Ser Gln Cys Asn Val Asn Thr Gly Gln Cys

1040

1045

1050

Ser Cys His Pro Lys Phe Ser Gly Met Lys Cys Ser Glu Cys Ser

1055

1060

1065

Arg Gly His Trp Asn Tyr Pro Leu Cys Thr Leu Cys Asp Cys Phe

1070

1075

1080

Leu Pro Gly Thr Asp Ala Thr Thr Cys Asp Leu Glu Thr Arg Lys

1085

1090

1095

Cys Ser Cys Ser Asp Gln Thr Gly Gln Cys Ser Cys Lys Val Asn

1100

1105

1110

Val Glu Gly Val His Cys Asp Arg Cys Arg Pro Gly Lys Phe Gly

1115

1120

1125

Leu Asp Ala Lys Asn Pro Leu Gly Cys Ser Ser Cys Tyr Cys Phe

1130	1135	1140
Gly Val Thr Ser Gln Cys Ser Glu Ala Lys Gly Leu Ile Arg Thr		
1145	1150	1155
Trp Val Thr Leu Ser Asp Glu Gln Thr Ile Leu Pro Leu Val Asp		
1160	1165	1170
Glu Ala Leu Gln His Thr Thr Thr Lys Gly Ile Ala Phe Gln Lys		
1175	1180	1185
Pro Glu Ile Val Ala Lys Met Asp Glu Val Arg Gln Glu Leu His		
1190	1195	1200
Leu Glu Pro Phe Tyr Trp Lys Leu Pro Gln Gln Phe Glu Gly Lys		
1205	1210	1215
Lys Leu Met Ala Tyr Gly Gly Lys Leu Lys Tyr Ala Ile Tyr Phe		
1220	1225	1230

Glu Ala Arg Asp Glu Thr Gly Phe Ala Thr Tyr Lys Pro Gln Val

1235

1240

1245

Ile Ile Arg Gly Gly Thr Pro Thr His Ala Arg Ile Ile Thr Arg

1250

1255

1260

His Met Ala Ala Pro Leu Ile Gly Gln Leu Thr Arg His Glu Ile

1265

1270

1275

Glu Met Thr Glu Lys Glu Trp Lys Tyr Tyr Gly Asp Asp Pro Arg

1280

1285

1290

Ile Ser Arg Thr Val Thr Arg Glu Asp Phe Leu Asp Ile Leu Tyr

1295

1300

1305

Asp Ile His Tyr Ile Leu Ile Lys Ala Thr Tyr Gly Asn Val Val

1310

1315

1320

Arg Gln Ser Arg Ile Ser Glu Ile Ser Met Glu Val Ala Glu Pro

1325 1330 1335

Gly His Val Leu Ala Gly Ser Pro Pro Ala His Leu Ile Glu Arg

1340 1345 1350

Cys Asp Cys Pro Pro Gly Tyr Ser Gly Leu Ser Cys Glu Thr Cys

1355 1360 1365

Ala Pro Gly Phe Tyr Arg Leu Arg Ser Glu Pro Gly Gly Arg Thr

1370 1375 1380

Pro Gly Pro Thr Leu Gly Thr Cys Val Pro Cys Gln Cys Asn Gly

1385 1390 1395

His Ser Ser Gln Cys Asp Pro Glu Thr Ser Val Cys Gln Asn Cys

1400 1405 1410

Gln His His Thr Ala Gly Asp Phe Cys Glu Arg Cys Ala Leu Gly

1415 1420 1425

Tyr Tyr Gly Ile Val Arg Gly Leu Pro Asn Asp Cys Gln Pro Cys

1430

1435

1440

Ala Cys Pro Leu Ile Ser Pro Ser Asn Asn Phe Ser Pro Ser Cys

1445

1450

1455

Val Leu Glu Gly Leu Glu Asp Tyr Arg Cys Thr Ala Cys Pro Arg

1460

1465

1470

Gly Tyr Glu Gly Gln Tyr Cys Glu Arg Cys Ala Pro Gly Tyr Thr

1475

1480

1485

Gly Ser Pro Ser Ser Pro Gly Gly Ser Cys Gln Glu Cys Glu Cys

1490

1495

1500

Asp Pro Tyr Gly Ser Leu Pro Val Pro Cys Asp Arg Val Thr Gly

1505

1510

1515

Leu Cys Thr Cys Arg Pro Gly Ala Thr Gly Arg Lys Cys Asp Gly

1520

1525

1530

Cys Glu His Trp His Ala Arg Glu Gly Ala Glu Cys Val Phe Cys

1535

1540

1545

Gly Asp Glu Cys Thr Gly Leu Leu Leu Gly Asp Leu Ala Arg Leu

1550

1555

1560

Glu Gln Met Thr Met Asn Ile Asn Leu Thr Gly Pro Leu Pro Ala

1565

1570

1575

Pro Tyr Lys Ile Leu Tyr Gly Leu Glu Asn Thr Thr Gln Glu Leu

1580

1585

1590

Lys His Leu Leu Ser Pro Gln Arg Ala Pro Glu Arg Leu Ile Gln

1595

1600

1605

Leu Ala Glu Gly Asn Val Asn Thr Leu Val Met Glu Thr Asn Glu

1610

1615

1620

Leu Leu Thr Arg Ala Thr Lys Val Thr Ala Asp Gly Glu Gln Thr

1625

1630

1635

Gly Gln Asp Ala Glu Arg Thr Asn Ser Arg Ala Glu Ser Leu Glu

1640

1645

1650

Glu Phe Ile Lys Gly Leu Val Gln Asp Ala Glu Ala Ile Asn Glu

1655

1660

1665

Lys Ala Val Lys Leu Asn Glu Thr Leu Gly Asn Gln Asp Lys Thr

1670

1675

1680

Ala Glu Arg Asn Leu Glu Glu Leu Gln Lys Glu Ile Asp Arg Met

1685

1690

1695

Leu Lys Glu Leu Arg Ser Lys Asp Leu Gln Thr Gln Lys Glu Val

1700

1705

1710

Ala Glu Asp Glu Leu Val Ala Ala Glu Gly Leu Leu Lys Arg Val

1715	1720	1725
Asn Lys Leu Phe Gly Glu Pro Arg Ala Gln Asn Glu Asp Met Glu		
1730	1735	1740
Lys Asp Leu Gln Gln Lys Leu Ala Glu Tyr Lys Asn Lys Leu Asp		
1745	1750	1755
Asp Ala Trp Asp Leu Leu Arg Glu Ala Thr Asp Lys Thr Arg Asp		
1760	1765	1770
Ala Asn Arg Leu Ser Ala Ala Asn Gln Lys Asn Met Thr Ile Leu		
1775	1780	1785
Glu Thr Lys Lys Glu Ala Ile Glu Gly Ser Lys Arg Gln Ile Glu		
1790	1795	1800
Asn Thr Leu Lys Glu Gly Asn Asp Ile Leu Asp Glu Ala Asn Gln		
1805	1810	1815

Leu Leu Gly Glu Ile Asn Ser Val Ile Asp Tyr Val Asp Asp Ile

1820

1825

1830

Lys Thr Lys Leu Pro Pro Met Ser Glu Glu Leu Ser Asp Lys Ile

1835

1840

1845

Asp Asp Leu Ala Gln Glu Ile Lys Asp Arg Arg Leu Ala Glu Lys

1850

1855

1860

Val Phe Gln Ala Glu Ser His Ala Ala Gln Leu Asn Asp Ser Ser

1865

1870

1875

Ala Val Leu Asp Gly Ile Leu Asp Glu Ala Lys Asn Ile Ser Phe

1880

1885

1890

Asn Ala Thr Ala Ala Phe Arg Ala Tyr Ser Asn Ile Lys Asp Tyr

1895

1900

1905

Ile Asp Glu Ala Glu Lys Val Ala Arg Glu Ala Lys Glu Leu Ala

1910	1915	1920
Gln Gly	Ala Thr Lys Leu Ala	Thr Ser Pro Gln Gly Leu Leu Lys
1925	1930	1935
Glu Asp	Ala Lys Gly Ser Leu	Gln Lys Ser Phe Arg Ile Leu Asn
1940	1945	1950
Glu Ala	Lys Lys Leu Ala Asn	Asp Val Lys Gly Asn His Asn Asp
1955	1960	1965
Leu Asn	Asp Leu Lys Thr Arg	Leu Glu Thr Ala Asp Leu Arg Asn
1970	1975	1980
Ser Gly	Leu Leu Gly Ala Leu	Asn Asp Thr Met Asp Lys Leu Ser
1985	1990	1995
Ala Ile	Thr Asn Asp Thr Ala	Ala Lys Leu Gln Ala Val Lys Glu
2000	2005	2010

Lys Ala Arg Glu Ala Asn Asp Thr Ala Lys Ala Val Leu Ala Gln

2015

2020

2025

Val Lys Asp Leu His Gln Asn Leu Asp Gly Leu Lys Gln Asn Tyr

2030

2035

2040

Asn Lys Leu Ala Asp Ser Val Ala Lys Thr Asn Ala Val Val Lys

2045

2050

2055

Asp Pro Ser Lys Asn Lys Ile Ile Ala Asp Ala Gly Thr Ser Val

2060

2065

2070

Arg Asn Leu Glu Gln Glu Ala Asp Arg Leu Ile Asp Lys Leu Lys

2075

2080

2085

Pro Ile Lys Glu Leu Glu Asp Asn Leu Lys Lys Asn Ile Ser Glu

2090

2095

2100

Ile Lys Glu Leu Ile Asn Gln Ala Arg Lys Gln Ala Asn Ser Ile

2105	2110	2115
Lys Val Ser Val Ser Ser Gly Gly Asp Cys Val Arg Thr Tyr Arg		
2120	2125	2130
Pro Glu Ile Lys Lys Gly Ser Tyr Asn Asn Ile Val Val His Val		
2135	2140	2145
Lys Thr Ala Val Ala Asp Asn Leu Leu Phe Tyr Leu Gly Ser Ala		
2150	2155	2160
Lys Phe Ile Asp Phe Leu Ala Ile Glu Met Arg Lys Gly Lys Val		
2165	2170	2175
Ser Phe Leu Trp Ile Val Gly Ser Gly Val Gly Arg Val Gly Phe		
2180	2185	2190
Pro Asp Leu Thr Ile Asp Asp Ser Tyr Trp Tyr Arg Ile Glu Ala		
2195	2200	2205

Ser Arg Thr Gly Arg Asn Gly Ser Ile Ser Val Arg Ala Leu Asp

2210

2215

2220

Gly Pro Lys Ala Ser Met Val Pro Ser Thr Tyr His Ser Val Ser

2225

2230

2235

Pro Pro Gly Tyr Thr Ile Leu Asp Val Asp Ala Asn Ala Met Leu

2240

2245

2250

Phe Val Gly Gly Leu Thr Gly Lys Ile Lys Lys Ala Asp Ala Val

2255

2260

2265

Arg Val Ile Thr Phe Thr Gly Cys Met Gly Glu Thr Tyr Phe Asp

2270

2275

2280

Asn Lys Pro Ile Gly Leu Trp Asn Phe Arg Glu Lys Glu Gly Asp

2285

2290

2295

Cys Lys Gly Cys Thr Val Ser Pro Gln Val Glu Asp Ser Glu Gly

2300	2305	2310
Thr Ile Gln Phe Asp Gly Glu Gly Tyr Ala Leu Val Ser Arg Pro		
2315	2320	2325
Ile Arg Trp Tyr Pro Asn Ile Ser Thr Val Met Phe Lys Phe Arg		
2330	2335	2340
Thr Phe Ser Ser Ser Ala Leu Leu Met Tyr Leu Ala Thr Arg Asp		
2345	2350	2355
Leu Lys Asp Phe Met Ser Val Glu Leu Ser Asp Gly His Val Lys		
2360	2365	2370
Val Ser Tyr Asp Leu Gly Ser Gly Met Thr Ser Val Val Ser Asn		
2375	2380	2385
Gln Asn His Asn Asp Gly Lys Trp Lys Ala Phe Thr Leu Ser Arg		
2390	2395	2400

Ile Gln Lys Gln Ala Asn Ile Ser Ile Val Asp Ile Asp Ser Asn

2405

2410

2415

Gln Glu Glu Asn Val Ala Thr Ser Ser Ser Gly Asn Asn Phe Gly

2420

2425

2430

Leu Asp Leu Lys Ala Asp Asp Lys Ile Tyr Phe Gly Gly Leu Pro

2435

2440

2445

Thr Leu Arg Asn Leu Ser Met Lys Ala Arg Pro Glu Val Asn Val

2450

2455

2460

Lys Lys Tyr Ser Gly Cys Leu Lys Asp Ile Glu Ile Ser Arg Thr

2465

2470

2475

Pro Tyr Asn Ile Leu Ser Ser Pro Asp Tyr Val Gly Val Thr Lys

2480

2485

2490

Gly Cys Ser Leu Glu Asn Val Asn Thr Val Ser Phe Pro Lys Pro

2495	2500	2505
Gly Phe Val Glu Leu Ala Ala Val Ser Ile Asp Val Gly Thr Glu		
2510	2515	2520
Ile Asn Leu Ser Phe Ser Thr Arg Asn Glu Ser Gly Ile Ile Leu		
2525	2530	2535
Leu Gly Ser Gly Gly Thr Leu Thr Pro Pro Arg Arg Lys Arg Arg		
2540	2545	2550
Gln Thr Thr Gln Ala Tyr Tyr Ala Ile Phe Leu Asn Lys Gly Arg		
2555	2560	2565
Leu Glu Val His Leu Ser Ser Gly Thr Arg Thr Met Arg Lys Ile		
2570	2575	2580
Val Ile Lys Pro Glu Pro Asn Leu Phe His Asp Gly Arg Glu His		
2585	2590	2595

Ser Val His Val Glu Arg Thr Arg Gly Ile Phe Thr Val Gln Ile

2600

2605

2610

Asp Glu Asp Arg Arg His Ile Gln Asn Leu Thr Glu Glu Gln Pro

2615

2620

2625

Ile Glu Val Lys Lys Leu Phe Val Gly Gly Ala Pro Pro Glu Phe

2630

2635

2640

Gln Pro Ser Pro Leu Arg Asn Ile Pro Ala Phe Gln Gly Cys Val

2645

2650

2655

Trp Asn Leu Val Ile Asn Ser Ile Pro Met Asp Phe Ala Gln Pro

2660

2665

2670

Ile Ala Phe Lys Asn Ala Asp Ile Gly Arg Cys Thr Tyr Gln Lys

2675

2680

2685

Pro Arg Glu Asp Glu Ser Glu Ala Val Pro Ala Glu Val Ile Val

2690	2695	2700
Gln Pro	Gln Ser Val Pro Thr	Pro Ala Phe Pro Phe Pro Val Pro
2705	2710	2715
Thr Met	Val His Gly Pro Cys	Val Ala Glu Ser Glu Pro Ala Leu
2720	2725	2730
Leu Thr	Gly Ser Lys Gln Phe	Gly Leu Ser Arg Asn Ser His Ile
2735	2740	2745
Ala Ile	Val Phe Asp Asp Thr	Lys Val Lys Asn Arg Leu Thr Ile
2750	2755	2760
Glu Leu	Glu Val Arg Thr Glu	Ala Glu Ser Gly Leu Leu Phe Tyr
2765	2770	2775
Met Gly	Arg Ile Asn His Ala	Asp Phe Gly Thr Val Gln Leu Arg
2780	2785	2790

Asn Gly Phe Pro Phe Phe Ser Tyr Asp Leu Gly Ser Gly Ser Thr

2795

2800

2805

Arg Thr Met Ile Pro Thr Lys Ile Asn Asp Gly Gln Trp His Lys

2810

2815

2820

Ile Lys Ile Val Arg Val Lys Gln Glu Gly Ile Leu Tyr Val Asp

2825

2830

2835

Asp Ala Ser Ser Gln Thr Ile Ser Pro Lys Lys Ala Asp Ile Leu

2840

2845

2850

Asp Val Gly Gly Ile Leu Tyr Val Gly Gly Leu Pro Ile Asn Tyr

2855

2860

2865

Thr Thr Arg Arg Ile Gly Pro Val Thr Tyr Ser Leu Asp Gly Cys

2870

2875

2880

Val Arg Asn Leu His Met Glu Gln Ala Pro Val Asp Leu Asp Gln

2885	2890	2895
Pro Thr Ser Ser Phe His Val Gly Thr Cys Phe Ala Asn Ala Glu		
2900	2905	2910
Ser Gly Thr Tyr Phe Asp Gly Thr Gly Phe Gly Lys Ala Val Gly		
2915	2920	2925
Gly Phe Ile Val Gly Leu Asp Leu Leu Val Glu Phe Glu Phe Arg		
2930	2935	2940
Thr Thr Arg Pro Thr Gly Val Leu Leu Gly Ile Ser Ser Gln Lys		
2945	2950	2955
Met Asp Gly Met Gly Ile Glu Met Ile Asp Glu Lys Leu Met Phe		
2960	2965	2970
His Val Asp Asn Gly Ala Gly Arg Phe Thr Ala Ile Tyr Asp Ala		
2975	2980	2985

Glu Ile Pro Gly His Met Cys Asn Gly Gln Trp Tyr Lys Val Thr
2990 2995 3000

Ala Lys Lys Ile Lys Asn Arg Leu Glu Leu Val Val Asp Gly Asn
3005 3010 3015

Gln Val Asp Ala Gln Ser Pro Asn Ser Ala Ser Thr Ser Ala Asp
3020 3025 3030

Thr Asn Asp Pro Val Phe Val Gly Gly Phe Pro Gly Gly Leu Asn
3035 3040 3045

Gln Phe Gly Leu Thr Thr Asn Ile Arg Phe Arg Gly Cys Ile Arg
3050 3055 3060

Ser Leu Lys Leu Thr Lys Gly Thr Ala Asn Arg Trp Arg Leu Ile
3065 3070 3075

Leu Pro Arg Pro Trp Asn

3080

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Met Glu Trp Ala Ser

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Gly Glu Pro Gly Arg Gly Arg Gln Gly Gln Pro Leu Pro Trp Glu Leu

10

15

20

cgc ttg ggc cta ctt cta agt gtg ctg gct gcc aca ttg gcc cag gcc 152

Arg Leu Gly Leu Leu Leu Ser Val Leu Ala Ala Thr Leu Ala Gln Ala

25	30	35	
cgc tcc ttg gat gta cct ggc tgt tot cga gga agc tgc tat cca gcc			200
Pro Ser Leu Asp Val Pro Gly Cys Ser Arg Gly Ser Cys Tyr Pro Ala			
40	45	50	
acc ggt gac ctg ttg gtg ggc cgt gcg gac aga ctg acg gcc tca tcc			248
Thr Gly Asp Leu Leu Val Gly Arg Ala Asp Arg Leu Thr Ala Ser Ser			
55	60	65	
acg tgt ggc ttg cat agc cct caa ccc tac tgt att gtc agt cac ctg			296
Thr Cys Gly Leu His Ser Pro Gln Pro Tyr Cys Ile Val Ser His Leu			
70	75	80	85
cag gac gaa aag aag tgt ttc ctg tgt gac tcc cga cgt ccc ttc tct			344
Gln Asp Glu Lys Lys Cys Phe Leu Cys Asp Ser Arg Arg Pro Phe Ser			
90	95	100	
gct cga gac aac cca aat agt cat cgg atc cag aat gta gtc acc agc			392
Ala Arg Asp Asn Pro Asn Ser His Arg Ile Gln Asn Val Val Thr Ser			
105	110	115	
ttt gcg cca caa cgc cgg acg gcc tgg tgg caa tcg gag aac ggg gtt			440
Phe Ala Pro Gln Arg Arg Thr Ala Trp Trp Gln Ser Glu Asn Gly Val			
120	125	130	

cca atg gtc acc atc caa ctg gac ctg gaa gct gag ttt cat ttc acc 488

Pro Met Val Thr Ile Gln Leu Asp Leu Glu Ala Glu Phe His Phe Thr

135

140

145

cac ctc att atg acg ttc aag acg ttc cgg cct gct gct atg ctg gtg 536

His Leu Ile Met Thr Phe Lys Thr Phe Arg Pro Ala Ala Met Leu Val

150

155

160

165

gag cgt tct gca gac ttt ggc cgc acc tgg cac gtg tac cga tat ttt 584

Glu Arg Ser Ala Asp Phe Gly Arg Thr Trp His Val Tyr Arg Tyr Phe

170

175

180

tcc tat gac tgc ggg gct gac ttc ccg gga atc cca ctg gcc ccg cca 632

Ser Tyr Asp Cys Gly Ala Asp Phe Pro Gly Ile Pro Leu Ala Pro Pro

185

190

195

cgt cgc tgg gat gat gta gtg tgt gag tcc cgc tac tca gaa atc gag 680

Arg Arg Trp Asp Asp Val Val Cys Glu Ser Arg Tyr Ser Glu Ile Glu

200

205

210

ccg tct acg gaa ggc gag gtc atc tat cgt gtg ctg gac cct gct att 728

Pro Ser Thr Glu Gly Glu Val Ile Tyr Arg Val Leu Asp Pro Ala Ile

215

220

225

cct atc cca gac ccc tac agc tca cgg att cag aac ctg ttg aag atc 776

Pro Ile Pro Asp Pro Tyr Ser Ser Arg Ile Gln Asn Leu Leu Lys Ile

230	235	240	245	
acc aac cta cga gtg aac tta acc cgg ctt cac aca ctg gga gac aac				824
Thr Asn Leu Arg Val Asn Leu Thr Arg Leu His Thr Leu Gly Asp Asn				
	250	255	260	
ttg ctt gac cca cgg agg gag atc cgg gaa aaa tac tat tat gct ctc				872
Leu Leu Asp Pro Arg Arg Glu Ile Arg Glu Lys Tyr Tyr Tyr Ala Leu				
	265	270	275	
tat gaa ctt gtc atc cgt ggc aac tgc ttc tgc tat ggc cac gcc tca				920
Tyr Glu Leu Val Ile Arg Gly Asn Cys Phe Cys Tyr Gly His Ala Ser				
	280	285	290	
cag tgt gcg cct gca cca ggg gcg ccg gcc cat gct gag ggc atg gta				968
Gln Cys Ala Pro Ala Pro Gly Ala Pro Ala His Ala Glu Gly Met Val				
	295	300	305	
cac gga gcc tgt atc tgc aag cac aat act cgt gga ctc aac tgt gag				1016
His Gly Ala Cys Ile Cys Lys His Asn Thr Arg Gly Leu Asn Cys Glu				
310	315	320	325	
cag tgt cag gat ttc tat cag gac ctt ccc tgg cac cct gca gag gac				1064
Gln Cys Gln Asp Phe Tyr Gln Asp Leu Pro Trp His Pro Ala Glu Asp				
	330	335	340	

ggc cat act cac gcc tgt cgg aag tgt gag tgc aac ggg cat act cat 1112

Gly His Thr His Ala Cys Arg Lys Cys Glu Cys Asn Gly His Thr His

345

350

355

agc tgc cac ttt gac atg gct gtc tac ctg gca tct gga aat gta agt 1160

Ser Cys His Phe Asp Met Ala Val Tyr Leu Ala Ser Gly Asn Val Ser

360

365

370

gga ggc gta tgc gat ggg tgt cag cac aac aca gct ggg cgc cat tgt 1208

Gly Gly Val Cys Asp Gly Cys Gln His Asn Thr Ala Gly Arg His Cys

375

380

385

gag ttc tgc cgg ccc ttc ttc tac cgt gac ccc acc aag gac atg cgg 1256

Glu Phe Cys Arg Pro Phe Phe Tyr Arg Asp Pro Thr Lys Asp Met Arg

390

395

400

405

gac cca gct gtg tgc cgt cct tgt gac tgt gac cct atg ggt tct caa 1304

Asp Pro Ala Val Cys Arg Pro Cys Asp Cys Asp Pro Met Gly Ser Gln

410

415

420

gat ggt ggt cgc tgt gat tct cat gat gac cct gtg cta gga ctg gtc 1352

Asp Gly Gly Arg Cys Asp Ser His Asp Asp Pro Val Leu Gly Leu Val

425

430

435

tca ggc cag tgt cgc tgc aaa gaa cac gtg gtt ggc act cgc tgc cag 1400

Ser Gly Gln Cys Arg Cys Lys Glu His Val Val Gly Thr Arg Cys Gln

440	445	450	
caa tgc cgt gat ggc ttc ttt gga ctt agt gcc agt gac cct cga ggg			1448
Gln Cys Arg Asp Gly Phe Phe Gly Leu Ser Ala Ser Asp Pro Arg Gly			
455	460	465	
tgc cag cgt tgc cag tgt aat tca cgg ggc aca gtg cct ggg agc tcc			1496
Cys Gln Arg Cys Gln Cys Asn Ser Arg Gly Thr Val Pro Gly Ser Ser			
470	475	480	485
cct tgt gac tcc agt agt gga acc tgt ttc tgc aag cgt ctg gtg acc			1544
Pro Cys Asp Ser Ser Ser Gly Thr Cys Phe Cys Lys Arg Leu Val Thr			
490	495	500	
gga cat ggc tgt gac cgc tgt ctg cct ggc cac tgg ggc ctg agc cat			1592
Gly His Gly Cys Asp Arg Cys Leu Pro Gly His Trp Gly Leu Ser His			
505	510	515	
gac ctg ctg ggc tgc cgt ccc tgt gac tgt gat gtg ggc ggt gcc ttg			1640
Asp Leu Leu Gly Cys Arg Pro Cys Asp Cys Asp Val Gly Gly Ala Leu			
520	525	530	
gat cct cag tgt gat gag gcc acc ggt cag tgc cgc tgc cgc caa cac			1688
Asp Pro Gln Cys Asp Glu Ala Thr Gly Gln Cys Arg Cys Arg Gln His			
535	540	545	

atg att ggg cgg cgc tgc gaa caa gtg cag cct ggc tac ttc cgg cct 1736

Met Ile Gly Arg Arg Cys Glu Gln Val Gln Pro Gly Tyr Phe Arg Pro

550 555 560 565

ttt ctg gac cat tta acc tgg gag gct gag gct gcc caa ggg cag ggg 1784

Phe Leu Asp His Leu Thr Trp Glu Ala Glu Ala Ala Gln Gly Gln Gly

570 575 580

ctt gag gtg gta gag cgg ctg gtg acc aac cga gag act ccg tcc tgg 1832

Leu Glu Val Val Glu Arg Leu Val Thr Asn Arg Glu Thr Pro Ser Trp

585 590 595

act ggc cca ggc ttt gtg cgg ctg cga gaa ggt cag gaa gtg gag ttc 1880

Thr Gly Pro Gly Phe Val Arg Leu Arg Glu Gly Gln Glu Val Glu Phe

600 605 610

ctg gtg acc tct ttg cct agg gcc atg gac tat gac ctg cta ctg cgc 1928

Leu Val Thr Ser Leu Pro Arg Ala Met Asp Tyr Asp Leu Leu Leu Arg

615 620 625

tgg gag ccc cag gtc cct gag caa tgg gca gag ctg gaa ctg atg gtg 1976

Trp Glu Pro Gln Val Pro Glu Gln Trp Ala Glu Leu Glu Leu Met Val

630 635 640 645

cag cgt ccg ggg cct gtg tct gct cac agt ccg tgc ggg cat gtg ctg 2024

Gln Arg Pro Gly Pro Val Ser Ala His Ser Pro Cys Gly His Val Leu

650	655	660	
cct aag gat gac cgc att cag ggg atg ctt cac cca aac acc agg ttt			2072
Pro Lys Asp Asp Arg Ile Gln Gly Met Leu His Pro Asn Thr Arg Phe			
665	670	675	
ttg gtg ttt ccc aga cct gtc tgc ctt gag cct ggc atc tcc tac aag			2120
Leu Val Phe Pro Arg Pro Val Cys Leu Glu Pro Gly Ile Ser Tyr Lys			
680	685	690	
ctg aag ctg aaa ctg atc gga aca ggg gga cga gcc cag cct gaa acc			2168
Leu Lys Leu Lys Leu Ile Gly Thr Gly Gly Arg Ala Gln Pro Glu Thr			
695	700	705	
tcc tac tct gga tta ctc att gac tcg ctg gtc ctg cag ccc cac gtc			2216
Ser Tyr Ser Gly Leu Leu Ile Asp Ser Leu Val Leu Gln Pro His Val			
710	715	720	725
ttg gtg cta gag atg ttt agt ggg ggc gat gct gct gct ctg gag cgc			2264
Leu Val Leu Glu Met Phe Ser Gly Gly Asp Ala Ala Ala Leu Glu Arg			
730	735	740	
cgt acc acc ttt gaa cgc tac cgc tgc cat gag gaa ggt ctg atg ccc			2312
Arg Thr Thr Phe Glu Arg Tyr Arg Cys His Glu Glu Gly Leu Met Pro			
745	750	755	

agc aag gcc cct cta tct gag acc tgt gcc ccc ctc ctc atc agc gtg 2360

Ser Lys Ala Pro Leu Ser Glu Thr Cys Ala Pro Leu Leu Ile Ser Val

760

765

770

tcc gcc ttg atc tac aat ggc gcc ttg cca tgt cag tgt gac cct caa 2408

Ser Ala Leu Ile Tyr Asn Gly Ala Leu Pro Cys Gln Cys Asp Pro Gln

775

780

785

ggc tca ctg agt tct gaa tgc agt cct cac ggt ggc cag tgc cgg tgc 2456

Gly Ser Leu Ser Ser Glu Cys Ser Pro His Gly Gly Gln Cys Arg Cys

790

795

800

805

aaa cct gga gtg gtt gga cgc cgt tgt gat gtc tgt gct act ggc tac 2504

Lys Pro Gly Val Val Gly Arg Arg Cys Asp Val Cys Ala Thr Gly Tyr

810

815

820

tat ggc ttt ggc cct gca ggc tgt caa gcc tgc cag tgt agt cct gat 2552

Tyr Gly Phe Gly Pro Ala Gly Cys Gln Ala Cys Gln Cys Ser Pro Asp

825

830

835

gga gca ctc agt gcc ctc tgt gaa ggg act agt gga cag tgc ccc tgc 2600

Gly Ala Leu Ser Ala Leu Cys Glu Gly Thr Ser Gly Gln Cys Pro Cys

840

845

850

cga cct ggt gcc ttt ggt ctt cgc tgt gac cac tgt caa cgt ggc cag 2648

Arg Pro Gly Ala Phe Gly Leu Arg Cys Asp His Cys Gln Arg Gly Gln

855	860	865	
tgg gga ttc cct aat tgc cgg ccg tgt gtc tgc aat ggg cgt gcg gat	2696		
Trp Gly Phe Pro Asn Cys Arg Pro Cys Val Cys Asn Gly Arg Ala Asp			
870	875	880	885
gag tgt gat acc cac aca ggc gct tgc ctg ggc tgc cgt gat tac acg	2744		
Glu Cys Asp Thr His Thr Gly Ala Cys Leu Gly Cys Arg Asp Tyr Thr			
890	895	900	
ggg ggc gag cac tgt gaa agg tgc att gct ggt ttt cat ggg gac cca	2792		
Gly Gly Glu His Cys Glu Arg Cys Ile Ala Gly Phe His Gly Asp Pro			
905	910	915	
cgg ctg cca tat ggg ggc cag tgc cgg cct tgt ccc tgc cct gaa ggc	2840		
Arg Leu Pro Tyr Gly Gly Gln Cys Arg Pro Cys Pro Cys Pro Glu Gly			
920	925	930	
cct ggg agc cag cga cac ttt gct act tct tgc cac cgg gat gga tat	2888		
Pro Gly Ser Gln Arg His Phe Ala Thr Ser Cys His Arg Asp Gly Tyr			
935	940	945	
tcc cag caa att gtg tgc cag tgt cga gaa ggc tac aca ggg ctt cgg	2936		
Ser Gln Gln Ile Val Cys Gln Cys Arg Glu Gly Tyr Thr Gly Leu Arg			
950	955	960	965

tgt gaa gct tgt gcc ccc ggg cac ttt ggg gac cca tca aag cca ggt 2984

Cys Glu Ala Cys Ala Pro Gly His Phe Gly Asp Pro Ser Lys Pro Gly

970

975

980

ggc agg tgc caa ctg tgt gag tgc agt gga aac att gat ccc atg gac 3032

Gly Arg Cys Gln Leu Cys Glu Cys Ser Gly Asn Ile Asp Pro Met Asp

985

990

995

cct gat gcc tgt gat ccc cac acg ggg caa tgc ttg cgt tgt tta 3077

Pro Asp Ala Cys Asp Pro His Thr Gly Gln Cys Leu Arg Cys Leu

1000

1005

1010

cac aac aca gag ggg ccc cac tgt ggc tat tgc aag cct ggc ttc 3122

His Asn Thr Glu Gly Pro His Cys Gly Tyr Cys Lys Pro Gly Phe

1015

1020

1025

cat ggg caa gct gcc cga cag agc tgt cac cgc tgt acc tgc aac 3167

His Gly Gln Ala Ala Arg Gln Ser Cys His Arg Cys Thr Cys Asn

1030

1035

1040

ctt ctg ggc aca gat ccc agg cgg tgc cca tct acc gac ctg tgc 3212

Leu Leu Gly Thr Asp Pro Arg Arg Cys Pro Ser Thr Asp Leu Cys

1045

1050

1055

cat tgt gac cca agc act ggg cag tgc cca tgc ctt ccc cat gtc 3257

His Cys Asp Pro Ser Thr Gly Gln Cys Pro Cys Leu Pro His Val

1060	1065	1070	
caa ggc ctc	aac tgt gac cat tgt	gcc ccc aac ttt tgg	aac ttc 3302
Gln Gly Leu	Asn Cys Asp His Cys	Ala Pro Asn Phe Trp	Asn Phe
1075	1080	1085	
acc agt ggc	cgt ggc tgc cag cct	tgt gct tgt cac cca	agc cgg 3347
Thr Ser Gly	Arg Gly Cys Gln Pro	Cys Ala Cys His Pro	Ser Arg
1090	1095	1100	
gcc aga ggc	cct acc tgc aat gag	ttc aca ggg cag tgt	cac tgt 3392
Ala Arg Gly	Pro Thr Cys Asn Glu	Phe Thr Gly Gln Cys	His Cys
1105	1110	1115	
cat gct ggc	ttt ggt ggg agg act	tgt tct gag tgc caa	gag ctc 3437
His Ala Gly	Phe Gly Gly Arg Thr	Cys Ser Glu Cys Gln	Glu Leu
1120	1125	1130	
tac tgg gga	gac cct ggt ctg cag	tgc cgt gcc tgt gac	tgt gat 3482
Tyr Trp Gly	Asp Pro Gly Leu Gln	Cys Arg Ala Cys Asp	Cys Asp
1135	1140	1145	
cct aga gga	ata gac aaa cct cag	tgt cat cgt tcc aca	ggc cac 3527
Pro Arg Gly	Ile Asp Lys Pro Gln	Cys His Arg Ser Thr	Gly His
1150	1155	1160	

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Cys Ser Cys Arg Pro Gly Val Ser Gly Val Arg Cys Asp Gln Cys

1165

1170

1175

gct cgt ggc ttc tca ggg gtt ttt cct gct tgt cac ccc tgc cac 3617

Ala Arg Gly Phe Ser Gly Val Phe Pro Ala Cys His Pro Cys His

1180

1185

1190

gct tgc ttt gga gac tgg gat cgt gtg gta cag gac ctg gct gct 3662

Ala Cys Phe Gly Asp Trp Asp Arg Val Val Gln Asp Leu Ala Ala

1195

1200

1205

cgg acg cgg cgc ctg gag cag tgg gct cag gag ttg cag caa aca 3707

Arg Thr Arg Arg Leu Glu Gln Trp Ala Gln Glu Leu Gln Gln Thr

1210

1215

1220

gga gtg ctg ggt gcc ttt gag agc agc ttt ttg aac atg cag ggg 3752

Gly Val Leu Gly Ala Phe Glu Ser Ser Phe Leu Asn Met Gln Gly

1225

1230

1235

aag cta ggc atg gtg cag gcc att atg agt gcc cgc aat gcc tca 3797

Lys Leu Gly Met Val Gln Ala Ile Met Ser Ala Arg Asn Ala Ser

1240

1245

1250

gcc gcc tct acg gcg aag ctt gta gag gcc aca gag gga cta cgt 3842

Ala Ala Ser Thr Ala Lys Leu Val Glu Ala Thr Glu Gly Leu Arg

1255	1260	1265	
cat gaa atc	ggg aag acc acc gag	cgc ctg act cag tta	gaa gca 3887
His Glu Ile	Gly Lys Thr Thr Glu	Arg Leu Thr Gln Leu	Glu Ala
1270	1275	1280	
gag cta aca	gct gtg cag gat gag	aac ttc aat gcc aac	cat gca 3932
Glu Leu Thr	Ala Val Gln Asp Glu	Asn Phe Asn Ala Asn	His Ala
1285	1290	1295	
ctc agt ggt	ctg gag aga gac ggg	ctt gcg ctt aat ctc	acc ctg 3977
Leu Ser Gly	Leu Glu Arg Asp Gly	Leu Ala Leu Asn Leu	Thr Leu
1300	1305	1310	
agg cag ctg	gat cag cat ctg gag	atc ctc aaa cat tca	aat ttc 4022
Arg Gln Leu	Asp Gln His Leu Glu	Ile Leu Lys His Ser	Asn Phe
1315	1320	1325	
tta ggt gcc	tat gac agc atc cga	cat gcc cac agc cag	tcc aca 4067
Leu Gly Ala	Tyr Asp Ser Ile Arg	His Ala His Ser Gln	Ser Thr
1330	1335	1340	
gag gca gag	cgc cgt gcc aac gcc	tcc acc ttt gca gta	ccc agc 4112
Glu Ala Glu	Arg Arg Ala Asn Ala	Ser Thr Phe Ala Val	Pro Ser
1345	1350	1355	

cct gtg agc aac tca gca gat acc cgg cgt cgg acg gaa gtg cta 4157

Pro Val Ser Asn Ser Ala Asp Thr Arg Arg Arg Thr Glu Val Leu

1360

1365

1370

atg ggt gcc caa aaa gaa aac ttc aac cgc caa cat ttg gcc aac 4202

Met Gly Ala Gln Lys Glu Asn Phe Asn Arg Gln His Leu Ala Asn

1375

1380

1385

cag cag gca ctg gga cgg ctc tct gca cat gcc cac acc ctg agc 4247

Gln Gln Ala Leu Gly Arg Leu Ser Ala His Ala His Thr Leu Ser

1390

1395

1400

ctg acg ggc ata aat gag ttg gtg tgt ggg gca cca ggg gac gca 4292

Leu Thr Gly Ile Asn Glu Leu Val Cys Gly Ala Pro Gly Asp Ala

1405

1410

1415

ccc tgt gcc acc agc cct tgt ggg ggt gcc gga tgt cgg gat gaa 4337

Pro Cys Ala Thr Ser Pro Cys Gly Gly Ala Gly Cys Arg Asp Glu

1420

1425

1430

gat ggg cag ccc cgt tgt ggt ggc ctc ggt tgc agt ggg gca gca 4382

Asp Gly Gln Pro Arg Cys Gly Gly Leu Gly Cys Ser Gly Ala Ala

1435

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gcc acg gca gat cta gcg ctg ggc cgg gct cgg cac acg cag gca 4427

Ala Thr Ala Asp Leu Ala Leu Gly Arg Ala Arg His Thr Gln Ala

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Glu Leu Gln Arg Ala Leu Val Glu Gly Gly Gly Ile Leu Ser Arg			
1465	1470	1475	
gtg tct gag act cgt cgg cag gca gaa gag gca cag cag cga gca			4517
Val Ser Glu Thr Arg Arg Gln Ala Glu Glu Ala Gln Gln Arg Ala			
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cag gca gcc ctg gac aag gct aat gct tcc agg ggc cag gtg gaa			4562
Gln Ala Ala Leu Asp Lys Ala Asn Ala Ser Arg Gly Gln Val Glu			
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cag gcc aat cag gag ctt cga gaa ctt atc cag aat gtg aaa gac			4607
Gln Ala Asn Gln Glu Leu Arg Glu Leu Ile Gln Asn Val Lys Asp			
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ttc ctc agc cag gag gga gcc gat cct gac agt att gaa atg gta			4652
Phe Leu Ser Gln Glu Gly Ala Asp Pro Asp Ser Ile Glu Met Val			
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gcg act cgg gtg cta gac atc tcc atc ccg gcc tca ccc gag cag			4697
Ala Thr Arg Val Leu Asp Ile Ser Ile Pro Ala Ser Pro Glu Gln			
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atc cag cgc cta gcc agt gag att gca gaa cgc gtc cga agc ctg 4742

Ile Gln Arg Leu Ala Ser Glu Ile Ala Glu Arg Val Arg Ser Leu

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1560

1565

gcc gac gtg gac aca atc ctg gcc cat acc atg ggc gac gtg cgt 4787

Ala Asp Val Asp Thr Ile Leu Ala His Thr Met Gly Asp Val Arg

1570

1575

1580

cgg gct gaa cag cta ctg caa gat gcg cac cgg gca cgg agc cgg 4832

Arg Ala Glu Gln Leu Leu Gln Asp Ala His Arg Ala Arg Ser Arg

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1590

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gcc gag ggt gag aga cag aag gca gag aca gtc caa gcg gca ctg 4877

Ala Glu Gly Glu Arg Gln Lys Ala Glu Thr Val Gln Ala Ala Leu

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gag gag gct cag agg gca caa gga gct gct cag ggt gcc atc tgg 4922

Glu Glu Ala Gln Arg Ala Gln Gly Ala Ala Gln Gly Ala Ile Trp

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gga gca gtg gtt gac aca caa aac aca gag cag acc ctg cag cgg 4967

Gly Ala Val Val Asp Thr Gln Asn Thr Glu Gln Thr Leu Gln Arg

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gtc cag gag agg atg gca ggt gca gag aag tct ctg aac tct gcc 5012

Val Gln Glu Arg Met Ala Gly Ala Glu Lys Ser Leu Asn Ser Ala

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Gly Glu Arg	Ala Arg Gln Leu Asp	Ala Leu Leu Glu Ala	Leu Lys
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ctg aaa cgg	gca gga aat agc ctg	gca gca tct aca gcg	gaa gaa 5102
Leu Lys Arg	Ala Gly Asn Ser Leu	Ala Ala Ser Thr Ala	Glu Glu
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Thr Ala Gly	Ser Ala Gln Ser Arg	Ala Arg Glu Ala Glu	Lys Gln
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cta cgg gaa	caa gta ggt gac caa	tac caa aca gtg agg	gcg ttg 5192
Leu Arg Glu	Gln Val Gly Asp Gln	Tyr Gln Thr Val Arg	Ala Leu
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gca gag cgg	aag gct gaa ggt gtt	ctg gct gca caa gcc	agg gca 5237
Ala Glu Arg	Lys Ala Glu Gly Val	Leu Ala Ala Gln Ala	Arg Ala
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gaa caa ctg	cgg gat gag gct cgg	gac ctg ttg cag gcc	gct cag 5282
Glu Gln Leu	Arg Asp Glu Ala Arg	Asp Leu Leu Gln Ala	Ala Gln
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Asp Lys Leu Gln Arg Leu Gln Glu Leu Glu Gly Thr Tyr Glu Glu

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1755

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aac gag cgt gca ctg gag ggc aaa gcg gcc cag ctg gat ggg ctg 5372

Asn Glu Arg Ala Leu Glu Gly Lys Ala Ala Gln Leu Asp Gly Leu

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gaa gcc agg atg cgc agt gtg ctc cag gcc atc aac ttg cag gtc 5417

Glu Ala Arg Met Arg Ser Val Leu Gln Ala Ile Asn Leu Gln Val

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Gln Ile Tyr Asn Thr Cys Gln

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35 40 45

Ser Cys Tyr Pro Ala Thr Gly Asp Leu Leu Val Gly Arg Ala Asp Arg

50 55 60

Leu Thr Ala Ser Ser Thr Cys Gly Leu His Ser Pro Gln Pro Tyr Cys

65 70 75 80

Ile Val Ser His Leu Gln Asp Glu Lys Lys Cys Phe Leu Cys Asp Ser

85 90 95

Arg Arg Pro Phe Ser Ala Arg Asp Asn Pro Asn Ser His Arg Ile Gln

100

105

110

Asn Val Val Thr Ser Phe Ala Pro Gln Arg Arg Thr Ala Trp Trp Gln

115

120

125

Ser Glu Asn Gly Val Pro Met Val Thr Ile Gln Leu Asp Leu Glu Ala

130

135

140

Glu Phe His Phe Thr His Leu Ile Met Thr Phe Lys Thr Phe Arg Pro

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Ala Ala Met Leu Val Glu Arg Ser Ala Asp Phe Gly Arg Thr Trp His

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Val Tyr Arg Tyr Phe Ser Tyr Asp Cys Gly Ala Asp Phe Pro Gly Ile

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Pro Leu Ala Pro Pro Arg Arg Trp Asp Asp Val Val Cys Glu Ser Arg

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Tyr Ser Glu Ile Glu Pro Ser Thr Glu Gly Glu Val Ile Tyr Arg Val

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Leu Asp Pro Ala Ile Pro Ile Pro Asp Pro Tyr Ser Ser Arg Ile Gln

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Asn Leu Leu Lys Ile Thr Asn Leu Arg Val Asn Leu Thr Arg Leu His

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255

Thr Leu Gly Asp Asn Leu Leu Asp Pro Arg Arg Glu Ile Arg Glu Lys

260

265

270

Tyr Tyr Tyr Ala Leu Tyr Glu Leu Val Ile Arg Gly Asn Cys Phe Cys

275

280

285

Tyr Gly His Ala Ser Gln Cys Ala Pro Ala Pro Gly Ala Pro Ala His

290

295

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Ala Glu Gly Met Val His Gly Ala Cys Ile Cys Lys His Asn Thr Arg

305 310 315 320

Gly Leu Asn Cys Glu Gln Cys Gln Asp Phe Tyr Gln Asp Leu Pro Trp

325 330 335

His Pro Ala Glu Asp Gly His Thr His Ala Cys Arg Lys Cys Glu Cys

340 345 350

Asn Gly His Thr His Ser Cys His Phe Asp Met Ala Val Tyr Leu Ala

355 360 365

Ser Gly Asn Val Ser Gly Gly Val Cys Asp Gly Cys Gln His Asn Thr

370 375 380

Ala Gly Arg His Cys Glu Phe Cys Arg Pro Phe Phe Tyr Arg Asp Pro

385 390 395 400

Thr Lys Asp Met Arg Asp Pro Ala Val Cys Arg Pro Cys Asp Cys Asp

405 410 415

Pro Met Gly Ser Gln Asp Gly Gly Arg Cys Asp Ser His Asp Asp Pro

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425

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Val Leu Gly Leu Val Ser Gly Gln Cys Arg Cys Lys Glu His Val Val

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Gly Thr Arg Cys Gln Gln Cys Arg Asp Gly Phe Phe Gly Leu Ser Ala

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Ser Asp Pro Arg Gly Cys Gln Arg Cys Gln Cys Asn Ser Arg Gly Thr

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Val Pro Gly Ser Ser Pro Cys Asp Ser Ser Ser Gly Thr Cys Phe Cys

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Lys Arg Leu Val Thr Gly His Gly Cys Asp Arg Cys Leu Pro Gly His

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Trp Gly Leu Ser His Asp Leu Leu Gly Cys Arg Pro Cys Asp Cys Asp

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Val Gly Gly Ala Leu Asp Pro Gln Cys Asp Glu Ala Thr Gly Gln Cys

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Arg Cys Arg Gln His Met Ile Gly Arg Arg Cys Glu Gln Val Gln Pro

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555

560

Gly Tyr Phe Arg Pro Phe Leu Asp His Leu Thr Trp Glu Ala Glu Ala

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570

575

Ala Gln Gly Gln Gly Leu Glu Val Val Glu Arg Leu Val Thr Asn Arg

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585

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Glu Thr Pro Ser Trp Thr Gly Pro Gly Phe Val Arg Leu Arg Glu Gly

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Gln Glu Val Glu Phe Leu Val Thr Ser Leu Pro Arg Ala Met Asp Tyr

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Asp Leu Leu Leu Arg Trp Glu Pro Gln Val Pro Glu Gln Trp Ala Glu

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Leu Glu Leu Met Val Gln Arg Pro Gly Pro Val Ser Ala His Ser Pro

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Cys Gly His Val Leu Pro Lys Asp Asp Arg Ile Gln Gly Met Leu His

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Pro Asn Thr Arg Phe Leu Val Phe Pro Arg Pro Val Cys Leu Glu Pro

675 680 685

Gly Ile Ser Tyr Lys Leu Lys Leu Lys Leu Ile Gly Thr Gly Gly Arg

690 695 700

Ala Gln Pro Glu Thr Ser Tyr Ser Gly Leu Leu Ile Asp Ser Leu Val

705 710 715 720

Leu Gln Pro His Val Leu Val Leu Glu Met Phe Ser Gly Gly Asp Ala

725

730

735

Ala Ala Leu Glu Arg Arg Thr Thr Phe Glu Arg Tyr Arg Cys His Glu

740

745

750

Glu Gly Leu Met Pro Ser Lys Ala Pro Leu Ser Glu Thr Cys Ala Pro

755

760

765

Leu Leu Ile Ser Val Ser Ala Leu Ile Tyr Asn Gly Ala Leu Pro Cys

770

775

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Gln Cys Asp Pro Gln Gly Ser Leu Ser Ser Glu Cys Ser Pro His Gly

785

790

795

800

Gly Gln Cys Arg Cys Lys Pro Gly Val Val Gly Arg Arg Cys Asp Val

805

810

815

Cys Ala Thr Gly Tyr Tyr Gly Phe Gly Pro Ala Gly Cys Gln Ala Cys

820

825

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Gln Cys Ser Pro Asp Gly Ala Leu Ser Ala Leu Cys Glu Gly Thr Ser

835

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845

Gly Gln Cys Pro Cys Arg Pro Gly Ala Phe Gly Leu Arg Cys Asp His

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Cys Gln Arg Gly Gln Trp Gly Phe Pro Asn Cys Arg Pro Cys Val Cys

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870

875

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Asn Gly Arg Ala Asp Glu Cys Asp Thr His Thr Gly Ala Cys Leu Gly

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890

895

Cys Arg Asp Tyr Thr Gly Gly Glu His Cys Glu Arg Cys Ile Ala Gly

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905

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Phe His Gly Asp Pro Arg Leu Pro Tyr Gly Gly Gln Cys Arg Pro Cys

915

920

925

Pro Cys Pro Glu Gly Pro Gly Ser Gln Arg His Phe Ala Thr Ser Cys

930

935

940

His Arg Asp Gly Tyr Ser Gln Gln Ile Val Cys Gln Cys Arg Glu Gly

945

950

955

960

Tyr Thr Gly Leu Arg Cys Glu Ala Cys Ala Pro Gly His Phe Gly Asp

965

970

975

Pro Ser Lys Pro Gly Gly Arg Cys Gln Leu Cys Glu Cys Ser Gly Asn

980

985

990

Ile Asp Pro Met Asp Pro Asp Ala Cys Asp Pro His Thr Gly Gln Cys

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1000

1005

Leu Arg Cys Leu His Asn Thr Glu Gly Pro His Cys Gly Tyr Cys

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Lys Pro Gly Phe His Gly Gln Ala Ala Arg Gln Ser Cys His Arg

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Leu Pro His Val Gln Gly Leu Asn Cys Asp His Cys Ala Pro Asn
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His Pro Ser Arg Ala Arg Gly Pro Thr Cys Asn Glu Phe Thr Gly
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Gln Cys His Cys His Ala Gly Phe Gly Gly Arg Thr Cys Ser Glu
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Cys Gln Glu Leu Tyr Trp Gly Asp Pro Gly Leu Gln Cys Arg Ala

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Cys Asp Cys Asp Pro Arg Gly Ile Asp Lys Pro Gln Cys His Arg

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Ser Thr Gly His Cys Ser Cys Arg Pro Gly Val Ser Gly Val Arg

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1170

Cys Asp Gln Cys Ala Arg Gly Phe Ser Gly Val Phe Pro Ala Cys

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1180

1185

His Pro Cys His Ala Cys Phe Gly Asp Trp Asp Arg Val Val Gln

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Leu Gln Gln Thr Gly Val Leu Gly Ala Phe Glu Ser Ser Phe Leu

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1230

Asn Met Gln Gly Lys Leu Gly Met Val Gln Ala Ile Met Ser Ala

1235

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1245

Arg Asn Ala Ser Ala Ala Ser Thr Ala Lys Leu Val Glu Ala Thr

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Glu Gly Leu Arg His Glu Ile Gly Lys Thr Thr Glu Arg Leu Thr

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Gln Leu Glu Ala Glu Leu Thr Ala Val Gln Asp Glu Asn Phe Asn

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1290

Ala Asn His Ala Leu Ser Gly Leu Glu Arg Asp Gly Leu Ala Leu

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1305

Asn Leu Thr Leu Arg Gln Leu Asp Gln His Leu Glu Ile Leu Lys

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His Ser Asn Phe Leu Gly Ala Tyr Asp Ser Ile Arg His Ala His

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Ser Gln Ser Thr Glu Ala Glu Arg Arg Ala Asn Ala Ser Thr Phe

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Ala Val Pro Ser Pro Val Ser Asn Ser Ala Asp Thr Arg Arg Arg

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1360

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Thr Glu Val Leu Met Gly Ala Gln Lys Glu Asn Phe Asn Arg Gln

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1375

1380

His Leu Ala Asn Gln Gln Ala Leu Gly Arg Leu Ser Ala His Ala

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His Thr Leu Ser Leu Thr Gly Ile Asn Glu Leu Val Cys Gly Ala

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Pro Gly Asp Ala Pro Cys Ala Thr Ser Pro Cys Gly Gly Ala Gly

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His Thr Gln Ala Glu Leu Gln Arg Ala Leu Val Glu Gly Gly Gly

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1465

1470

Ile Leu Ser Arg Val Ser Glu Thr Arg Arg Gln Ala Glu Glu Ala

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Gln Gln Arg Ala Gln Ala Ala Leu Asp Lys Ala Asn Ala Ser Arg

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Gly Gln Val Glu Gln Ala Asn Gln Glu Leu Arg Glu Leu Ile Gln

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Val Arg Ser Leu Ala Asp Val Asp Thr Ile Leu Ala His Thr Met

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Gly Asp Val Arg Arg Ala Glu Gln Leu Leu Gln Asp Ala His Arg

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Ala Arg Ser Arg Ala Glu Gly Glu Arg Gln Lys Ala Glu Thr Val

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Gln Ala Ala Leu Glu Glu Ala Gln Arg Ala Gln Gly Ala Ala Gln

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Gly Ala Ile Trp Gly Ala Val Val Asp Thr Gln Asn Thr Glu Gln

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Thr Leu Gln Arg Val Gln Glu Arg Met Ala Gly Ala Glu Lys Ser

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Leu Asn Ser Ala Gly Glu Arg Ala Arg Gln Leu Asp Ala Leu Leu

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Glu Ala Leu Lys Leu Lys Arg Ala Gly Asn Ser Leu Ala Ala Ser

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Thr Ala Glu Glu Thr Ala Gly Ser Ala Gln Ser Arg Ala Arg Glu

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Ala Glu Lys Gln Leu Arg Glu Gln Val Gly Asp Gln Tyr Gln Thr

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Val Arg Ala Leu Ala Glu Arg Lys Ala Glu Gly Val Leu Ala Ala

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1720

1725

Gln Ala Arg Ala Glu Gln Leu Arg Asp Glu Ala Arg Asp Leu Leu

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1735

1740

Gln Ala Ala Gln Asp Lys Leu Gln Arg Leu Gln Glu Leu Glu Gly

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Thr Tyr Glu Glu Asn Glu Arg Ala Leu Glu Gly Lys Ala Ala Gln

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Ala Leu Val Ile Gln Glu Thr His Phe Ala Ala Gly Ala Asp Met Gly

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Ser Cys Tyr Asp Gly Val Gly Arg Ala Gln Arg Cys Leu Pro Glu Phe

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 Arg Pro Pro Glu Asp Phe Cys Pro His Val Gly Ala Pro Gly Ala Gly
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 Leu Gln Cys Gln Arg Cys Asp Asp Ala Asp Pro Gly Arg Arg His Asp
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 Lys Phe His Thr Ser Arg Pro Glu Ser Phe Ala Ile Tyr Lys Arg Thr
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Tyr Ala Ser Gly Pro Trp Glu Pro Tyr Gln Tyr Tyr Ser Ala Ser Cys
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Glu Asn Ala Ala Phe Gly Arg Arg Ala Glu Ala Ser His Thr Cys Gly

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Arg Pro Pro Glu Asp Phe Cys Pro His Val Gly Ala Pro Gly Ala Gly

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Leu Gln Cys Gln Arg Cys Asp Asp Ala Asp Pro Gly Arg Arg His Asp

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Ala Ser Tyr Leu Thr Asp Phe His Ser Pro Asp Asp Ser Thr Trp Trp

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Gln Ser Pro Ser Met Ala Phe Gly Val Gln Tyr Pro Thr Ser Val Asn

115

120

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130

135

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Lys Phe His Thr Ser Arg Pro Glu Ser Phe Ala Ile Tyr Lys Arg Thr

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150

155

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Tyr Ala Ser Gly Pro Trp Glu Pro Tyr Gln Tyr Tyr Ser Ala Ser Cys

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175

Gln Lys Thr Tyr Gly Arg Pro Glu Gly His Tyr Leu Arg Pro Gly Glu

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185

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Asp Glu Arg Val Ala Phe Cys Thr Ser Glu Phe Ser Asp Ile Ser Pro

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Leu Asn Gly Gly Asn Val Ala Phe Ser Thr Leu Glu Gly Arg Pro Ser

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Ala Tyr Asn Phe Glu Glu Ser Pro Val Leu Gln Glu Trp Val Thr Ser

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230

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Asp Phe Ser Val Gly Gly Arg Cys Lys Cys Asn Gly His Ala Ser Glu

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Cys Glu Pro Asn Ala Ala Gly Gln Leu Ala Cys Arg Cys Gln His Asn

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Thr Thr Gly Val Asp Cys Glu Arg Cys Leu Pro Phe Phe Gln Asp Arg

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Pro Trp Ala Arg Gly Thr Ala Glu Asp Ala Asn Glu Cys Leu Pro Cys

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Asn Cys Ser Gly His Ser Glu Glu Cys Thr Phe Asp Arg Glu Leu Tyr

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Arg Ser Thr Gly His Gly Gly His Cys Gln Arg Cys Arg Asp His Thr

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Thr Gly Pro His Cys Glu Arg Cys Glu Lys Asn Tyr Tyr Arg Trp Ser

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375

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Pro Lys Thr Pro Cys Gln Pro Cys Asp Cys His Pro Ala Gly Ser Leu

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Ser Leu Gln Cys Asp Asn Ser Gly Val Cys Pro Cys Lys Pro Thr Val

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Thr Gly Trp Lys Cys Asp Arg Cys Leu Pro Gly Phe His Ser Leu Ser

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Glu Gly Gly Cys Arg Pro Cys Ala Cys Asn Val Ala Gly Ser Leu Gly

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Thr Cys Asp Pro Arg Ser Gly Asn Cys Pro Cys Lys Glu Asn Val Glu

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Gln Trp Glu Arg Thr Tyr Leu Gly Ser Ala Leu Val Cys Thr Cys Tyr

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50 55 60

Thr Cys Phe Asp Lys Tyr Thr Gly Asn Thr Tyr Arg Val Gly Asp Thr

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Tyr Glu Arg Pro Lys Asp Ser Met Ile Trp Asp Cys Thr Cys Ile Gly

85 90 95

Ala Gly Arg Gly Arg Ile Ser Cys Thr Ile Ala Asn Arg Cys His Glu

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Gly Gly Gln Ser Tyr Lys Ile Gly Asp Thr Trp Arg Arg Pro His Glu

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Gly Thr Ser Tyr Val Val Gly Glu Thr Trp Glu Lys Pro Tyr Gln Gly

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Trp Met Met Val Asp Cys Thr Cys Leu Gly Glu Gly Ser Gly Arg Ile

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Thr Cys Thr Ser Arg Asn Arg Cys Asn Asp Gln Asp Thr Arg Thr Ser

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200

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Tyr Arg Ile Gly Asp Thr Trp Ser Lys Lys Asp Asn Arg Gly Asn Leu

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Leu Gln Cys Ile Cys Thr Gly Asn Gly Arg Gly Glu Trp Lys Cys Glu

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Arg His Thr Ser Leu Gln Thr Thr Ser Ala Gly Ser Gly Ser Phe Thr

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Asp Val Arg Thr Ala Ile Tyr Gln Pro Gln Pro His Pro Gln Pro Pro

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Pro Tyr Gly His Cys Val Thr Asp Ser Gly Val Val Tyr Ser Val Gly

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Met Gln Trp Leu Lys Thr Gln Gly Asn Lys Gln Met Leu Cys Thr Cys

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Leu Gly Asn Gly Val Ser Cys Gln Glu Thr Ala Val Thr Gln Thr Tyr

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Phe Cys Thr Asp His Thr Val Leu Val Gln Thr Arg Gly Gly Asn Ser

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420 425 430

Ala Ala His Glu Glu Ile Cys Thr Thr Asn Glu Gly Val Met Tyr Arg

435 440 445

Ile Gly Asp Gln Trp Asp Lys Gln His Asp Met Gly His Met Met Arg

450 455 460

Cys Thr Cys Val Gly Asn Gly Arg Gly Glu Trp Thr Cys Val Ala Tyr

465 470 475 480

Ser Gln Leu Arg Asp Gln Cys Ile Val Asp Gly Ile Thr Tyr Asn Val

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Asn Asp Thr Phe His Lys Arg His Glu Glu Gly His Met Leu Asn Cys

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Thr Cys Phe Gly Gln Gly Arg Gly Arg Trp Lys Cys Asp Pro Val Asp

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Gln Cys Gln Asp Ser Glu Thr Arg Thr Phe Tyr Gln Ile Gly Asp Ser

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Arg Gly Ile Gly Glu Trp Ala Cys Gln Pro Leu Gln Thr Tyr Pro Asp

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Asn Ser His Pro Ile Gln Trp Ser Ala Pro Glu Ser Ser His Ile Ser

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600

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Lys Tyr Ile Leu Arg Trp Lys Pro Lys Asn Ser Pro Asp Arg Trp Lys

610

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620

Glu Ala Thr Ile Pro Gly His Leu Asn Ser Tyr Thr Ile Lys Gly Leu

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635

640

Arg Pro Gly Val Val Tyr Glu Gly Gln Leu Ile Ser Val Gln His Tyr

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650

655

Gly Gln Arg Glu Val Thr Arg Phe Asp Phe Thr Thr Thr Ser Thr Ser

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665

670

Pro Ala Val Thr Ser Asn Thr Val Thr Gly Glu Thr Thr Pro Leu Ser

675

680

685

Pro Val Val Ala Thr Ser Glu Ser Val Thr Glu Ile Thr Ala Ser Ser

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695

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Phe Val Val Ser Trp Val Ser Ala Ser Asp Thr Val Ser Gly Phe Arg

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710

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720

Val Glu Tyr Glu Leu Ser Glu Glu Gly Asp Glu Pro Gln Tyr Leu Asp

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Leu Pro Ser Thr Ala Thr Ser Val Asn Ile Pro Asp Leu Leu Pro Gly

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Arg Lys Tyr Thr Val Asn Val Tyr Glu Ile Ser Glu Glu Gly Glu Gln

755

760

765

Asn Leu Ile Leu Ser Thr Ser Gln Thr Thr Ala Pro Asp Ala Pro Pro

770

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Asp Pro Thr Val Asp Gln Val Asp Asp Thr Ser Ile Val Val Arg Trp

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Ser Arg Pro Arg Ala Pro Ile Thr Gly Tyr Arg Ile Val Tyr Ser Pro

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Ser Val Glu Gly Ser Ser Thr Glu Leu Asn Leu Pro Glu Thr Ala Asn

820 825 830

Ser Val Thr Leu Ser Asp Leu Gln Pro Gly Val Gln Tyr Asn Ile Thr

835 840 845

Ile Tyr Ala Val Glu Glu Asn Gln Glu Ser Thr Pro Val Phe Ile Gln

850 855 860

Gln Glu Thr Thr Gly Val Pro Arg Ser Asp Lys Val Pro Pro Pro Arg

865 870 875 880

Asp Leu Gln Phe Val Glu Val Thr Asp Val Lys Ile Thr Ile Met Trp

885 890 895

Thr Pro Pro Glu Ser Pro Val Thr Gly Tyr Arg Val Asp Val Ile Pro

900

905

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Val Asn Leu Pro Gly Glu His Gly Gln Arg Leu Pro Val Ser Arg Asn

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Thr Phe Ala Glu Val Thr Gly Leu Ser Pro Gly Val Thr Tyr His Phe

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935

940

Lys Val Phe Ala Val Asn Gln Gly Arg Glu Ser Lys Pro Leu Thr Ala

945

950

955

960

Gln Gln Ala Thr Lys Leu Asp Ala Pro Thr Asn Leu Gln Phe Ile Asn

965

970

975

Glu Thr Asp Thr Thr Val Ile Val Thr Trp Thr Pro Pro Arg Ala Arg

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Ile Val Gly Tyr Arg Leu Thr Val Gly Leu Thr Arg Gly Gly Gln Pro

995

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Lys Gln Tyr Asn Val Gly Pro Ala Ala Ser Gln Tyr Pro Leu Arg

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Lys Gly Asn Gln Gln Ser Pro Arg Val Thr Gly Val Phe Thr Thr

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Leu Gln Pro Leu Gly Ser Ile Pro His Tyr Asn Thr Glu Val Thr

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Glu Thr Thr Ile Val Ile Thr Trp Thr Pro Ala Pro Arg Ile Gly

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1075

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Phe Lys Leu Gly Val Arg Pro Ser Gln Gly Gly Glu Ala Pro Arg

1085

1090

1095

Glu Val Thr Ser Glu Ser Gly Ser Ile Val Val Ser Gly Leu Thr

1100

1105

1110

Pro Gly Val Glu Tyr Val Tyr Thr Ile Ser Val Leu Arg Asp Gly

1115

1120

1125

Gln Glu Arg Asp Ala Pro Ile Val Lys Lys Val Val Thr Pro Leu

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1135

1140

Ser Pro Pro Thr Asn Leu His Leu Glu Ala Asn Pro Asp Thr Gly

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1150

1155

Val Leu Thr Val Ser Trp Glu Arg Ser Thr Thr Pro Asp Ile Thr

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Gly Tyr Arg Ile Thr Thr Thr Pro Thr Asn Gly Gln Gln Gly Tyr

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1180

1185

Ser Leu Glu Glu Val Val His Ala Asp Gln Ser Ser Cys Thr Phe

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Glu Asn Leu Ser Pro Gly Leu	Glu Tyr Asn Val Ser	Val Tyr Thr
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Val Lys Asp Asp Lys Glu Ser	Val Pro Ile Ser Asp	Thr Ile Ile
1220	1225	1230
Pro Ala Val Pro Pro Pro Thr	Asp Leu Arg Phe Thr	Asn Val Gly
1235	1240	1245
Pro Asp Thr Met Arg Val Thr	Trp Ala Pro Pro Ser	Ser Ile Glu
1250	1255	1260
Leu Thr Asn Leu Leu Val Arg	Tyr Ser Pro Val Lys	Asn Glu Glu
1265	1270	1275
Asp Val Ala Glu Leu Ser Ile	Ser Pro Ser Asp Asn	Ala Val Val
1280	1285	1290

Leu Thr Asn Leu Leu Pro Gly Thr Glu Tyr Leu Val Ser Val Ser

1295

1300

1305

Ser Val Tyr Glu Gln His Glu Ser Ile Pro Leu Arg Gly Arg Gln

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Lys Thr Ala Leu Asp Ser Pro Ser Gly Ile Asp Phe Ser Asp Ile

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1330

1335

Thr Ala Asn Ser Phe Thr Val His Trp Ile Ala Pro Arg Ala Thr

1340

1345

1350

Ile Thr Gly Tyr Arg Ile Arg His His Pro Glu Asn Met Gly Gly

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Arg Pro Arg Glu Asp Arg Val Pro Pro Ser Arg Asn Ser Ile Thr

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1375

1380

Leu Thr Asn Leu Asn Pro Gly Thr Glu Tyr Val Val Ser Ile Val

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Ala Leu Asn Ser Lys Glu Glu Ser Leu Pro Leu Val Gly Gln Gln		
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Ser Thr Val Ser Asp Val Pro Arg Asp Leu Glu Val Ile Ala Ala		
1415	1420	1425
Thr Pro Thr Ser Leu Leu Ile Ser Trp Asp Ala Pro Ala Val Thr		
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Val Arg Tyr Tyr Arg Ile Thr Tyr Gly Glu Thr Gly Gly Ser Ser		
1445	1450	1455
Pro Val Gln Glu Phe Thr Val Pro Gly Ser Lys Ser Thr Ala Thr		
1460	1465	1470
Ile Ser Gly Leu Lys Pro Gly Val Asp Tyr Thr Ile Thr Val Tyr		
1475	1480	1485

Ala Val Thr Gly Arg Gly Asp Ser Pro Ala Ser Ser Lys Pro Val

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1495

1500

Ser Ile Asn Tyr Arg Thr Glu Ile Asp Lys Pro Ser Gln Met Gln

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Val Thr Asp Val Gln Asp Asn Ser Ile Ser Val Arg Trp Leu Pro

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1525

1530

Ser Ser Ser Pro Val Thr Gly Tyr Arg Val Thr Thr Ala Pro Lys

1535

1540

1545

Asn Gly Pro Gly Pro Ser Lys Thr Lys Thr Val Gly Pro Asp Gln

1550

1555

1560

Thr Glu Met Thr Ile Glu Gly Leu Gln Pro Thr Val Glu Tyr Val

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1570

1575

Val Ser Val Tyr Ala Gln Asn Gln Asn Gly Glu Ser Gln Pro Leu

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Val Gln Thr Ala Val Thr Thr Ile Pro Ala Pro Thr Asn Leu Lys

1595 1600 1605

Phe Thr Gln Val Thr Pro Thr Ser Leu Thr Ala Gln Trp Thr Ala

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Pro Asn Val Gln Leu Thr Gly Tyr Arg Val Arg Val Thr Pro Lys

1625 1630 1635

Glu Lys Thr Gly Pro Met Lys Glu Ile Asn Leu Ala Pro Asp Ser

1640 1645 1650

Ser Ser Val Val Val Ser Gly Leu Met Val Ala Thr Lys Tyr Glu

1655 1660 1665

Val Ser Val Tyr Ala Leu Lys Asp Thr Leu Thr Ser Arg Pro Ala

1670 1675 1680

Gln Gly Val Val Thr Thr Leu Glu Asn Val Ser Pro Pro Arg Arg

1685

1690

1695

Ala Arg Val Thr Asp Ala Thr Glu Thr Thr Ile Thr Ile Ser Trp

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Arg Thr Lys Thr Glu Thr Ile Thr Gly Phe Gln Val Asp Ala Ile

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Pro Ala Asn Gly Gln Thr Pro Ile Gln Arg Thr Ile Arg Pro Asp

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Val Arg Ser Tyr Thr Ile Thr Gly Leu Gln Pro Gly Thr Asp Tyr

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Lys Ile His Leu Tyr Thr Leu Asn Asp Asn Ala Arg Ser Ser Pro

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1765

1770

Val Val Ile Asp Ala Ser Thr Ala Ile Asp Ala Pro Ser Asn Leu

1775	1780	1785
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1790	1795	1800
Pro Pro	Arg Ala Arg Ile Thr	Gly Tyr Ile Ile Lys Tyr Glu Lys
1805	1810	1815
Pro Gly	Ser Pro Pro Arg Glu	Val Val Pro Arg Pro Arg Pro Gly
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Val Thr	Glu Ala Thr Ile Thr	Gly Leu Glu Pro Gly Thr Glu Tyr
1835	1840	1845
Thr Ile	Gln Val Ile Ala Leu	Lys Asn Asn Gln Lys Ser Glu Pro
1850	1855	1860
Leu Ile	Gly Arg Lys Lys Thr	Asp Glu Leu Pro Gln Leu Val Thr
1865	1870	1875

Leu Pro His Pro Asn Leu His Gly Pro Glu Ile Leu Asp Val Pro

1880

1885

1890

Ser Thr Val Gln Lys Thr Pro Phe Ile Thr Asn Pro Gly Tyr Asp

1895

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1905

Thr Gly Asn Gly Ile Gln Leu Pro Gly Thr Ser Gly Gln Gln Pro

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1915

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Ser Leu Gly Gln Gln Met Ile Phe Glu Glu His Gly Phe Arg Arg

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Thr Thr Pro Pro Thr Thr Ala Thr Pro Val Arg His Arg Pro Arg

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Pro Tyr Pro Pro Asn Val Asn Glu Glu Ile Gln Ile Gly His Val

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Pro Arg Gly Asp Val Asp His His Leu Tyr Pro His Val Val Gly

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1975

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1990

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Thr Ile Ser Trp Thr Pro Phe Gln Glu Ser Ser Glu Tyr Ile Ile

2000

2005

2010

Ser Cys His Pro Val Gly Ile Asp Glu Glu Pro Leu Gln Phe Arg

2015

2020

2025

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2035

2040

Gly Ala Thr Tyr Asn Ile Ile Val Glu Ala Val Lys Asp Gln Gln

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Ser Asp Ser Gly Phe Lys Leu Ser Cys Gln Cys Leu Gly Phe Gly
2105 2110 2115

Ser Gly His Phe Arg Cys Asp Ser Ser Lys Trp Cys His Asp Asn
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Gly Val Asn Tyr Lys Ile Gly Glu Lys Trp Asp Arg Gln Gly Glu
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Glu Phe Lys Cys Asp Pro His Glu Ala Thr Cys Tyr Asp Asp Gly

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Lys Thr Tyr His Val Gly Glu Gln Trp Gln Lys Glu Tyr Leu Gly

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Ala Ile Cys Ser Cys Thr Cys Phe Gly Gly Gln Arg Gly Trp Arg

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2205

Cys Asp Asn Cys Arg Arg Pro Gly Ala Glu Pro Gly Asn Glu Gly

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Ser Thr Ala His Ser Tyr Asn Gln Tyr Ser Gln Arg Tyr His Gln

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